

**VEGETATION MONITORING
REPORT FOR THE**

**COTTONWOOD MINE, DES-BEE-
DOVE, DEER CREEK, TRAIL
MOUNTAIN & COTTONWOOD
CANYON AREAS**

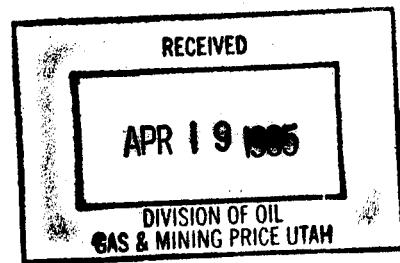
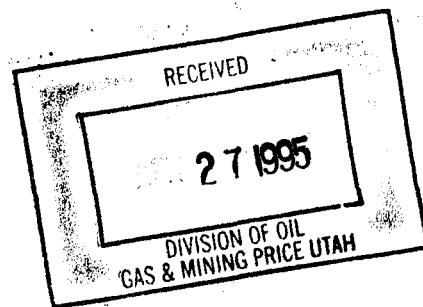
ACT/015/019

1994

PACIFICORP VEGETATION MONITORING
REPORT FOR THE
COTTONWOOD MINE, DES-BEE-DOVE, DEER
CREEK, TRAIL MOUNTAIN &
COTTONWOOD CANYON AREAS

15/10

1994



Prepared by

MT. NEBO SCIENTIFIC, INC.
330 East 400 South, Suite 6
Post Office Box 337
Springville, Utah 84663
(801) 489-6937

by
Patrick Collins Ph.D.

for

PACIFICORP
Post Office Box 1005
Huntington, Utah 84528

Report Date:
March 1995

TABLE OF CONTENTS

INTRODUCTION	1
METHODS	3
RESULTS	8
<u>Cottonwood Mine Area</u>	9
Old Fan Road	10
Reference Area	16
4th East Road	22
Storage Yard Slope	25
Parking Lot Slope	28
Road/Silo Pad Slope	31
Tipple Area Slopes	34
Sediment Pond Banks	37
Waste Rock (Old) Cell 1	41
Waste Rock (Old) Cell 2	46
Waste Rock (Old) Cell 2 ("Problem Area")	51
Waste Rock (Old) Cell 3	55
Waste Rock (Old) Cell 4	60
Waste Rock (Old) Berm 1	61
Waste Rock (Old) Berm 2	66
Waste Rock (Old) Berm 3	71
Waste Rock (Old) Berm 4	76
CTW Reference Area	77
Waste Rock (New) Road Slopes	83
Waste Rock (New) Topsoil Stockpiles	86
Waste Rock (New) Subsoil Stockpiles	89
Waste Rock (New) Sediment Pond Banks	92
Refuse Berm 1991	95
Ninth East Road Breakout	98
Test Plots	101
Photographs	103
<u>Des-Bee-Dove Area</u>	107
Beehive Yard Slope	108
Beehive Road Berm	111
Deseret Road Berm	114
Portal Road Berm	117
Bathhouse Road Berm	120
Tipple Slope	123
Sediment Storage Slope	124
Sediment Pond Banks	128
Haul Road Bench	131
Beehive Substation Slope	134
Sediment Pond Area	137
Bathhouse Slope	140
Material Yard Slope	143

TABLE OF CONTENTS (continued)

Test Plots '89	146
Test Plots '92	147
Photographs	165
 <u>Deer Creek</u>	167
Riparian Areas	168
Sediment Pond Dam	171
Temp. Sediment Basin	174
Roadside Areas	177
Gate Areas Slope	180
Fan Road Slopes	183
Refuse Pile and Berm	186
Rock Slide and Berm	189
Water Plant Slope	192
Pipeline	195
Deer Canyon	200
Waste Rock Access Road Slopes	203
Phase I Berm	207
Phase I Diversion	211
Photographs	215
 <u>Trail Mountain Mine</u>	217
Sediment Pond Outslope	218
 <u>Cottonwood Canyon Area</u>	221
Soil Piles	222
Reclaimed Slope & Reference Area Report	223
Photographs	247

**PACIFICORP VEGETATION MONITORING
REPORT FOR THE
COTTONWOOD MINE, DES-BEE-DOVE,
DEER CREEK TRAIL MOUNTAIN &
COTTONWOOD CANYON AREAS**

1994

INTRODUCTION

This report addresses vegetation monitoring of seeded areas and test plots results for 1994. Several of the areas were also sampled from 1990-1993 so comparisons can be made between years. The following is a list of areas monitored and reported within this document.

Cottonwood Mine Area

- Old Fan Road
- Reference Area
- 4th East Road
- Storage Yard Slope
- Parking Lot Slope
- Road/Silo Pad Slope
- Tipple Area Slopes
- Sediment Pond Banks
- Waste Rock (Old) Cell 1
- Waste Rock (Old) Cell 2
- Waste Rock (Old) Cell 3
- Waste Rock (Old) Cell 4
- Waste Rock (Old) Berm 1
- Waste Rock (Old) Berm 2
- Waste Rock (Old) Berm 3
- Waste Rock (Old) Berm 4
- CTW Reference Area
- Waste Rock (New) Road Slopes

Waste Rock (New) Topsoil Stockpiles
Waste Rock (New) Subsoil Stockpiles
Waste Rock (New) Sediment Pond Banks
Refuse Berm 1991
Ninth East Road Breakout
Test Plots

Des-Bee-Dove Area

Beehive Yard Slope
Beehive Road Berm
Deseret Road Berm
Portal Road Berm
Bathhouse Road Berm
Tipple Slope
Sediment Storage Slope
Sediment Pond Banks
Haul Road Bench
Beehive Substation Slope
Sediment Pond Area
Bathhouse Slope
Material Yard Slope
Test Plots '89
Test Plots '92

Deer Creek

Riparian Areas
Sediment Pond Dam
Temp. Sediment Basin
Roadside Areas
Gate Areas Slope
Fan Road Slopes
Refuse Pile and Berm
Rock Slide and Berm
Water Plant Slope
Pipeline
Deer Canyon
Waste Rock Access Road Slopes
Phase I Berm
Phase I Diversion

Trail Mountain Mine

Sediment Pond Outslope

Cottonwood Canyon

Soil Piles
Reclaimed Slope
Reference Area
Photographs

METHODS

Vegetation monitoring was conducted on revegetated sites and test plots for PACIFICORP in the growing season of 1994. Quantitative and/or qualitative data were taken on each site, depending on the monitoring schedule. In other words, quantitative data sampling was not scheduled this year on some sites. Each data sheet will briefly describe the sample parameters specific to that site.

QUALITATIVE DATA

Qualitative data were recorded on all sites. A qualitative data sheet for each site is included in this report and provides the following information: site name, general area, sample date, observers, slope, exposure, acreage, animal disturbance, erosion damage, cover, dominant plant species observed, and other pertinent notes.

When quantitative data were recorded, results are shown on these data sheets or reference to where the data is located.

Site Name

The site name that is given correlates with Pacificorp's

maps of the area and can be used for future reference and sampling.

Area

The "Area" on the data sheets is a reference to the general mine or property areas for quick reference and general use.

Date

Sample dates are also provided. All sample dates are within the 1994 growing season.

Workers

Lists the names of the individuals who recorded the data.

Exposure

Exposure was recorded on each site. Often the site had several exposures differences. In those cases, "variable" was written for the exposure on the data sheet.

Animal Disturbance

Values were given to the relative use by animal species at each site. The values and a brief explanation are given below.

None	-	no animal use was observed.
Slight	-	only little animal use was observed by droppings, tracks, or cropped vegetation.
Moderate	-	a fair degree of use was observed, mostly by the cropped vegetation. Several inches of production still remained available for use by the animals.
Severe	-	animal use had taken nearly all of the available current year's production.

Erosion

Erosion of the area was also assessed by qualitative methods. Actual measurements, descriptive notes or values described below were given to each site.

None	-	(or negligible) no erosion was observed.
Slight	-	small erosion rills beginning, usually less than 2:1 (2 inches wide by 1 inches deep).
Moderate	-	erosional rills and gullies from 2:1 to 4:2.
Severe	-	erosional rills and gullies over to 4:2 were observed.

Cover

Cover differences or notes may be given on the data sheet or references to the quantitative data.

Dominant Plant Species Observed

Sometimes plant species that were observed, but not encountered in the quadrats when sampling. Many of these species were recorded here. However, some of the species that were also encountered in the quadrats. Therefore, for a list of all species on a given site, one should refer to both quantitative and qualitative data sheets.

Notes

Site-specific, pertinent notes about each area were also taken i.e. identification of special considerations, areas of differential growth patterns, etc. Notes on specific methodologies on each site also are described here.

Photographs

Color photographs were taken for each site and are included in this report for documentation.

QUANTITATIVE DATA

Cover and Composition

Cover estimates were made using ocular methods with randomly placed meter square quadrats. Total living cover, litter, rock and bareground were recorded. Cover by species was also recorded. Raw data summations were included in this report. They provide all means and standard deviations. Species composition was also assessed from the quadrats. Sample sizes were often kept consistant each year. Because these data are presented to observe only trends for revegetation success and soil stabilization, no attempt was made to achieve sample adequacy for each individual site.

Woody Species Density

In some areas density estimates were needed. Density of woody plant species were recorded using the point-quarter distance method (Cottom and Curtis 1956) and by using belt transects. In the point-quarter method, random points were placed on the sample sites and measured into four quarters. The distances to the nearest woody plant species were then recorded in each quarter. The average point-to-individual distance was equal to the square root of the mean area per individual. In the belt transect method, sizes of transects varied with individual sites. In this method total counts of the woody species were

conducted in each transect. They were then summed and averaged to calculate the number of individuals per acre.

Production

Total annual biomass was estimated by clipping, drying and weighing current annual productivity. "Double sampling" using four quadrats around the clipped and weighed plot was accomplished.

RESULTS

To be consistent with previous years, data sheets for qualitative and quantitative (including raw data) sampling are included in this report. This gives the reviewer an overall view of the revegetation success of each area. For results of the above parameters, refer to the site-specific data sheets.

COTTONWOOD MINE AREA

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Old Fan Road

AREA: Cottonwood Mine (1984)

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 13-15 deg.

EXPOSURE: variable

AREA: .8 acres

ANIMAL USE/DISTURBANCE: None

EROSION: Negligible erosion.

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

Artemisia tridentata
Atriplex confertifolia
Chrysothamnus viscidiflorus
Chrysothamnus nauseosus
Eriogonum corymbosum
Gutierrezia sarothrae
Juniperus scopulorum
Populus angustifolia

Aster chilensis
Linum lewisi

Elymus spicatus
Elymus salinus

WOODY SPECIES DENSITY:	<u>No./Acre</u>
<u>Artemisia tridentata</u>	46.48
<u>Atriplex confertifolia</u>	354.41
<u>Chrysothamnus nauseosus</u>	1620.99
<u>Eriogonum corymbosum</u>	191.73
<u>Gutierrezia sarothrae</u>	34.86
<u>Juniperus scopulorum</u>	5.81
<u>Populus angustifolia</u>	11.62
TOTAL	<u>2265.90</u>

ANNUAL BIOMASS PRODUCTION

	<u>Pounds/Acre</u>		
	<u>Mean</u>	<u>Std Dev</u>	<u>Samp. Size</u>
Herbaceous species	700.39	459.90	20 (100)
Woody species	202.56	277.21	20 (100)
TOTAL	<u>902.87</u>	249.19	20 (100)

- NOTES:
- 1) Sampled cover, frequency, density & productivity.
 - 2) Cover was < 10% weedy spp. Cover estimate included overstory, but none was observed.
 - 3) Placed quadrats at a random number every 25'.
 - 4) We "double-sampled" on production.
 - 5) For woody spp. density, we used 5' x 50' belt transects. This meant there was a transect almost all the way up the road -- one after another.
 - 6) It appeared more rock slides occur each year, but it looks relatively stable on the revegetated area.
 - 7) Area still looks well vegetated.
 - 8) It would be too dangerous to try to improve rock stability in the area.
 - 9) On the density measurements, the low number was the slide area. This could be dropped out for the nmin tests.

UP&L-COTTONWOOD MINE

Old Fan Road

1984 (Final)

Acreage: .8

Slope 13-15 deg

Exposure: variable

Sample Date: 6-8 Sept 94

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
--	------	------	------	------	------	------	------

SHRUBS

<i>Chrysothamnus nauseosus</i>	0.00	0.00	25.00	10.00	0.00	10.00	25.00
<i>Atriplex confertifolia</i>	0.00	0.00	0.00	0.00	0.00	40.00	0.00
<i>Gutierrezia sarothrae</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Eriogonum corymbosum</i>	0.00	0.00	0.00	0.00	25.00	0.00	0.00

FORBS

<i>Aster chilensis</i>	5.00	10.00	20.00	15.00	0.00	10.00	5.00
<i>Linum lewisii</i>	0.00	5.00	10.00	5.00	0.00	0.00	0.00
<i>Salsola pestifer</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

<i>Elymus cinereus</i>	0.00	0.00	0.00	0.00	10.00	0.00	0.00
<i>Elymus lanceolatus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus spicatus</i>	10.00	0.00	0.00	0.00	0.00	0.00	30.00
<i>Sitanion hystrix</i>	5.00	10.00	10.00	10.00	5.00	0.00	0.00
<i>Elymus salinus</i>	30.00	20.00	5.00	0.00	5.00	10.00	0.00
<i>Elymus trachycaulus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COVER

Total Living Cover	50.00	45.00	70.00	40.00	45.00	70.00	60.00
Litter	5.00	25.00	10.00	10.00	10.00	10.00	10.00
Bareground	20.00	5.00	5.00	20.00	15.00	5.00	5.00
Rock	25.00	25.00	15.00	30.00	30.00	15.00	25.00

% COMPOSITION

Shrubs	0.00	0.00	35.71	25.00	55.56	71.43	41.67
Forbs	10.00	33.33	42.86	50.00	0.00	14.29	8.33
Grasses	90.00	66.67	21.43	25.00	44.44	14.29	50.00

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00
10.00	5.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	20.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
0.00	0.00	20.00	0.00	50.00	35.00	15.00	20.00	40.00	35.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	25.00	25.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	25.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	5.00	0.00	0.00	0.00	0.00	10.00	10.00	10.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45.00	50.00	45.00	45.00	75.00	45.00	40.00	50.00	50.00	35.00
25.00	20.00	10.00	10.00	5.00	5.00	10.00	10.00	5.00	5.00
10.00	5.00	5.00	10.00	5.00	5.00	25.00	10.00	40.00	5.00
20.00	25.00	40.00	35.00	15.00	45.00	25.00	30.00	5.00	55.00
22.22	50.00	0.00	44.44	0.00	0.00	37.50	40.00	0.00	0.00
0.00	0.00	44.44	0.00	66.67	77.78	37.50	40.00	80.00	100.00
77.78	50.00	55.56	55.56	33.33	22.22	25.00	20.00	20.00	0.00

18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00
0.00	0.00	0.00	0.00	0.00	0.00	10.00	15.00	25.00	15.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	35.00	40.00	15.00	10.00	50.00	0.00	0.00	20.00	10.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	15.00
20.00	0.00	10.00	35.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00
50.00	35.00	50.00	50.00	50.00	50.00	45.00	50.00	45.00	40.00
20.00	5.00	5.00	10.00	40.00	30.00	20.00	25.00	5.00	10.00
5.00	5.00	5.00	10.00	5.00	5.00	25.00	5.00	5.00	10.00
25.00	55.00	40.00	30.00	5.00	15.00	10.00	20.00	45.00	40.00
0.00	0.00	0.00	0.00	0.00	0.00	22.22	30.00	55.56	37.50
50.00	100.00	80.00	30.00	20.00	100.00	0.00	0.00	44.44	25.00
50.00	0.00	20.00	70.00	80.00	0.00	77.78	70.00	0.00	37.50

UP&L-COTTONWOOD MINE
 Old Fan Road
 1984 (Final)
 Acreage: .8
 Slope 13-15 deg
 Exposure: variable
 Sample Date: 6-8 Sept 94

28.00	29.00	30.00	Mean	SDev	Freq	
						SHRUBS
0.00	0.00	0.00	5.67	8.54	36.67	<i>Chrysothamnus nauseosus</i>
15.00	0.00	0.00	3.00	8.52	13.33	<i>Atriplex confertifolia</i>
0.00	0.00	0.00	0.33	1.80	3.33	<i>Gutierrezia sarothrae</i>
0.00	0.00	0.00	1.17	4.78	6.67	<i>Eriogonum corymbosum</i>
						FORBS
25.00	20.00	10.00	17.17	15.15	76.67	<i>Aster chilensis</i>
0.00	0.00	0.00	0.67	2.13	10.00	<i>Linum lewisii</i>
0.00	0.00	0.00	0.83	4.49	3.33	<i>Salsola pestifer</i>
						GRASSES
5.00	30.00	0.00	4.33	9.89	20.00	<i>Elymus cinereus</i>
0.00	0.00	0.00	1.17	4.78	6.67	<i>Elymus lanceolatus</i>
0.00	0.00	0.00	4.00	9.87	16.67	<i>Elymus spicatus</i>
0.00	10.00	0.00	3.17	4.91	33.33	<i>Sitanion hystrich</i>
0.00	0.00	45.00	7.17	11.52	43.33	<i>Elymus salinus</i>
0.00	0.00	0.00	0.83	4.49	3.33	<i>Elymus trachycaulus</i>
						COVER
45.00	60.00	55.00	49.50	9.34		Total Living Cover
5.00	15.00	30.00	13.50	9.23		Litter
10.00	5.00	5.00	9.83	8.21		Bareground
40.00	20.00	10.00	27.17	13.27		Rock
						% COMPOSITION
33.33	0.00	0.00	20.07	22.15		Shrubs
55.56	33.33	18.18	38.72	31.64		Forbs
11.11	66.67	81.82	41.20	27.65		Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: REFERENCE AREA

AREA: Cottonwood Mine Site

DATE: September 9, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 36 deg.

EXPOSURE: NE

ANIMAL USE/DISTURBANCE: Minimal

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see quantitative data)

WOODY SPECIES DENSITY:

No./Acre

<u>Amalanchier utahensis</u>	217.75
<u>Artemisia tridentata</u>	8.71
<u>Chrysothamnus nauseosus</u>	165.49
<u>Ephedra viridis</u>	8.71
<u>Eriogonum corymbosum</u>	17.42
<u>Gutierrezia sarothrae</u>	95.81
<u>Juniperus osteosperma</u>	34.84
<u>Pinus edulis</u>	182.91
<u>Pseudotsuga menziesii</u>	17.42
<u>Rosa woodsii</u>	17.42
Total	<u>766.48</u>

ANNUAL BIOMASS PRODUCTION:

Pounds/Acre

	<u>Mean</u>	<u>Std Dev</u>	<u>Samp. Size</u>
Herbaceous species	198.57	108.46	15 (75)
Woody species	<u>82.69</u>	<u>90.30</u>	<u>15 (75)</u>
TOTAL	<u>281.26</u>	129.42	15 (75)

Cottonwood Mine Mine Site
Reference Area
Page 2

- NOTES:
- 1) Sampled for cover, density & productivity.
 - 2) Placed a 200' transect north to south and sampled every 10' at right angles from it.
 - 3) Overstory (above breast ht. was taken). Therefore cover could be > 100%.
 - 4) Used point-quarter method for density.
 - 5) Used "double-sampling" techniques for productivity. Also did woody spp. & herbaceous spp. production.
 - 6) Production only estimated understory.

UP&L-COTTONWOOD MINE

Reference Area PJ

Acreage:

Slope 36 deg

Exposure: NE

Sample Date: 9 Sept 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Chrysothamnus nauseosus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Pinus edulis</i>	0.00	0.00	25.00	0.00	0.00	0.00	0.00
<i>Amalanchier utahensis</i>	0.00	0.00	0.00	0.00	25.00	35.00	0.00
<i>Gutierrezia sarothrae</i>	5.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Eriogonum corymbosum</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

<i>Hedysarum occidentale cano</i>	0.00	10.00	0.00	0.00	0.00	0.00	0.00
<i>Galium boreale</i>	0.00	0.00	0.00	0.00	0.00	0.00	5.00
<i>Machaeranthera grindeliae</i>	0.00	0.00	0.00	5.00	0.00	0.00	0.00

GRASSES

<i>Elymus salinus</i>	10.00	10.00	5.00	20.00	0.00	0.00	20.00
-----------------------	-------	-------	------	-------	------	------	-------

COVER

Overstory	0.00	0.00	0.00	0.00	0.00	10.00	0.00
Understory	15.00	20.00	30.00	25.00	25.00	35.00	25.00
Litter	5.00	5.00	25.00	10.00	10.00	20.00	5.00
Bareground	5.00	10.00	10.00	20.00	25.00	10.00	5.00
Rock	75.00	65.00	35.00	45.00	40.00	35.00	65.00

% COMPOSITION

Shrubs	33.33	0.00	83.33	0.00	100.00	77.78	0.00
Forbs	0.00	50.00	0.00	20.00	0.00	0.00	20.00
Grasses	66.67	50.00	16.67	80.00	0.00	0.00	80.00

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00
5.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	5.00	25.00	0.00	0.00	15.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

0.00	0.00	0.00	10.00	0.00	5.00	5.00	0.00	0.00	8.00
0.00	5.00	2.00	5.00	0.00	0.00	0.00	0.00	5.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

35.00	25.00	10.00	5.00	15.00	10.00	10.00	25.00	30.00	7.00
-------	-------	-------	------	-------	-------	-------	-------	-------	------

0.00	0.00	0.00	0.00	20.00	10.00	0.00	20.00	0.00	0.00
40.00	30.00	15.00	25.00	40.00	25.00	15.00	40.00	35.00	15.00
15.00	10.00	5.00	5.00	20.00	10.00	10.00	15.00	10.00	5.00
25.00	30.00	10.00	5.00	5.00	20.00	10.00	10.00	15.00	5.00
20.00	30.00	70.00	65.00	35.00	45.00	65.00	35.00	40.00	75.00

12.50	0.00	20.00	20.00	41.67	28.57	0.00	25.00	0.00	0.00
0.00	16.67	13.33	60.00	0.00	14.29	33.33	0.00	14.29	53.33
87.50	83.33	66.67	20.00	25.00	28.57	66.67	41.67	85.71	46.67

18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00
5.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
0.00	0.00	0.00	15.00	0.00	5.00	0.00	0.00	0.00	5.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
5.00	25.00	20.00	5.00	10.00	20.00	15.00	40.00	10.00	10.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	25.00	40.00	20.00	35.00	25.00	15.00	40.00	20.00	25.00
5.00	5.00	10.00	10.00	5.00	5.00	5.00	10.00	5.00	5.00
10.00	15.00	15.00	15.00	10.00	5.00	20.00	5.00	5.00	10.00
70.00	55.00	35.00	55.00	50.00	65.00	60.00	45.00	70.00	60.00
66.67	0.00	50.00	0.00	71.43	0.00	0.00	0.00	50.00	20.00
0.00	0.00	0.00	75.00	0.00	20.00	0.00	0.00	0.00	40.00
33.33	100.00	50.00	25.00	28.57	80.00	100.00	100.00	50.00	40.00

UP&L-COTTONWO

Reference Area PJ

Acreage:

Slope 36 deg

Exposure: NE

Sample Date: 9 Sept

28.00	29.00	30.00	Mean	SDev	Freq	
						SHRUBS
0.00	0.00	0.00	0.60	2.03	10.00	<i>Chrysothamnus nau</i>
0.00	0.00	0.00	1.67	6.24	6.67	<i>Pinus edulis</i>
0.00	5.00	0.00	4.50	9.25	26.67	<i>Amalanchier utahen</i>
0.00	0.00	0.00	0.67	2.13	10.00	<i>Gutierrezia sarothra</i>
0.00	0.00	0.00	0.17	0.90	3.33	<i>Eriogonum corymbo</i>
						FORBS
0.00	0.00	10.00	2.43	4.13	30.00	<i>Hedysarum occident</i>
5.00	0.00	0.00	0.90	1.87	20.00	<i>Galium boreale</i>
5.00	0.00	0.00	0.50	1.50	10.00	<i>Machaeranthera grin</i>
						GRASSES
10.00	35.00	15.00	15.23	10.31	93.33	<i>Elymus salinus</i>
						COVER
0.00	0.00	0.00	2.00	5.42		Overstory
20.00	40.00	25.00	26.67	8.79		Understory
10.00	5.00	20.00	9.50	5.53		Litter
20.00	15.00	10.00	12.50	6.80		Bareground
50.00	40.00	45.00	51.33	14.83		Rock
						% COMPOSITION
0.00	12.50	0.00	23.76	29.67		Shrubs
50.00	0.00	40.00	17.34	21.93		Forbs
50.00	87.50	60.00	54.98	29.00		Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: 4th East Road

AREA: Cottonwood Mine (1986)

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 3 - 5 degrees

EXPOSURE: north

AREA: .1 acre

ANIMAL USE/DISTURBANCE: slight

EROSION: Negligible

COVER: (see quantitative data).

DOMINANT PLANT SPECIES OBSERVED:

Medicago sativa

Elymus lanceolatus

Elymus smithii

- NOTES:
- 1) Sampled at regular intervals up road.
 - 2) As indicated by the condition of the vegetation, it has had a dry growing season.
 - 3) The site continues to be in very good condition.
 - 4) There was, however, low spp. diversity.

UP&L-COTTONWOOD MINE

4th East Road (1986)

Acreage: .1

Slope: 3-5 var

Exposure: N

Sample Date: 6-10 Sept 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS**FORBS**

Medicago sativa	20.00	20.00	30.00	30.00	35.00	35.00	45.00
-----------------	-------	-------	-------	-------	-------	-------	-------

GRASSES

Elymus smithii	10.00	20.00	15.00	0.00	0.00	10.00	0.00
Elymus lanceolatus	25.00	10.00	15.00	20.00	15.00	0.00	5.00

COVER

Total Living Cover	55.00	50.00	60.00	50.00	50.00	45.00	50.00
Litter	25.00	35.00	25.00	40.00	40.00	40.00	40.00
Bareground	10.00	10.00	5.00	5.00	5.00	10.00	5.00
Rock	10.00	5.00	10.00	5.00	5.00	5.00	5.00

% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	36.36	40.00	50.00	60.00	70.00	77.78	90.00
Grasses	63.64	60.00	50.00	40.00	30.00	22.22	10.00

UP&L-COTTONWOOD MINE
 4th East Road (1986)
 Acreage: .1
 Slope: 3-5 var
 Exposure: N
 Sample Date: 6-10 Sept 94

8.00 Mean SDev Freq

SHRUBS

40.00 31.88 8.27 100.00 FORBS

Medicago sativa

5.00	7.50	7.07	62.50	GRASSES
0.00	11.25	8.57	75.00	<i>Elymus smithii</i>
				<i>Elymus lanceolatus</i>

45.00	50.63	4.64	COVER
40.00	35.63	6.34	Total Living Cover
10.00	7.50	2.50	Litter
5.00	6.25	2.17	Bareground
			Rock

0.00	0.00	0.00	% COMPOSITION
88.89	64.13	19.60	Shrubs
11.11	35.87	19.60	Forbs
			Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Storage Yard Slope

AREA: Cottonwood Mine (1988 Reveg. Area)

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 30 - 40 deg.

EXPOSURE: S & E

AREA: 1.3 acres

ANIMAL USE/DISTURBANCE: None

EROSION: Slight because there were so many rocks present.

COVER: (see quantitative data).

DOMINANT PLANT SPECIES OBSERVED: (see quantitative data)

- NOTES:
- 1) Sampled regularly around area.
 - 2) As last 3 years, one area was almost devoid of vegetation including weeds. Hence 3% cover in one spot (see photographs).
 - 3) The east exposure supported mostly weedy species, whereas, the south face has a fair representation of native species.

UP&L-COTTONWOOD/WILBERG

Storage Yard Slope

1988 Reveg. Interim

Acreage: 1.3

Slope: S & E

Exposure: 30 - 40 deg

Sample Date: 6-10 Sept 199

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
--	------	------	------	------	------	------	------

SHRUBS

<i>Chrysothamnus nauseosus</i>	20.00	25.00	20.00	40.00	20.00	0.00	0.00
--------------------------------	-------	-------	-------	-------	-------	------	------

FORBS

<i>Aster chilensis</i>	0.00	0.00	0.00	0.00	0.00	3.00	0.00
<i>Penstemon palmeri</i>	0.00	5.00	10.00	0.00	10.00	0.00	0.00
<i>Kochia scoparia</i>	0.00	0.00	0.00	0.00	0.00	0.00	35.00

GRASSES

<i>Sitanion hystrix</i>	20.00	0.00	5.00	0.00	0.00	0.00	0.00
<i>Agropyron cristatum</i>	0.00	5.00	5.00	0.00	10.00	0.00	0.00
<i>Elymus lanceolatus</i>	0.00	0.00	0.00	10.00	0.00	0.00	0.00

COVER

Total Living Cover	40.00	35.00	40.00	50.00	40.00	3.00	35.00
Litter	5.00	5.00	5.00	20.00	5.00	1.00	10.00
Bareground	45.00	40.00	10.00	25.00	35.00	10.00	40.00
Rock	10.00	20.00	45.00	5.00	20.00	86.00	15.00

% COMPOSITION

Shrubs	50.00	71.43	50.00	80.00	50.00	0.00	0.00
Forbs	0.00	14.29	25.00	0.00	25.00	100.00	100.00
Grasses	50.00	14.29	25.00	20.00	25.00	0.00	0.00

UP&L-COTTONWOOD/WILBE
 Storage Yard Slope
 1988 Reveg. Interim
 Acreage: 1.3
 Slope: S & E
 Exposure: 30 - 40 deg
 Sample Date: 6-10 Sept 1994

8.00	9.00	10.00	Mean	SDev	Freq	
0.00	0.00	0.00	12.50	13.65	50.00	SHRUBS
						<i>Chrysothamnus nauseosus</i>
15.00	0.00	0.00	1.80	4.49	20.00	FORBS
0.00	0.00	0.00	2.50	4.03	30.00	<i>Aster chilensis</i>
30.00	65.00	50.00	18.00	23.69	40.00	<i>Penstemon palmeri</i>
						<i>Kochia scoparia</i>
0.00	0.00	0.00	2.50	6.02	20.00	GRASSES
0.00	0.00	0.00	2.00	3.32	30.00	<i>Sitanion hystrix</i>
0.00	0.00	0.00	1.00	3.00	10.00	<i>Agropyron cristatum</i>
						<i>Elymus lanceolatus</i>
45.00	65.00	50.00	40.30	15.06		COVER
10.00	10.00	25.00	9.60	7.10		Total Living Cover
5.00	5.00	10.00	22.50	15.37		Litter
40.00	20.00	15.00	27.60	22.76		Bareground
						Rock
0.00	0.00	0.00	30.14	31.49		% COMPOSITION
100.00	100.00	100.00	56.43	44.29		Shrubs
0.00	0.00	0.00	13.43	15.97		Forbs
						Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Parking Lot Slope

AREA: Cottonwood Mine

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 26 deg.

EXPOSURE: E

ANIMAL USE/DISTURBANCE: Slight

EROSION: Negligible, but erosion has been repaired by rocks & gravels.

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

Chrysothamnus nauseosus

Aster chilensis
Kochia scoparia
Grindelia squarrosa
Melilotus officinalis

Elymus cinereus
Stipa hymenoides

NOTES: 1) Similar to 1993, most of the species were weedy, except for the very north end of the slope (>80% weeds).

UP&L-COTTONWOOD MINE

Parking Lot Slope

1988 Reveg Interim

Acreage:

Slope: 26 deg

Exposure: E

Sample Date: 6-10 Sept 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Chrysothamnus nauseosus</i>	10.00	0.00	0.00	0.00	0.00	0.00	0.00
--------------------------------	-------	------	------	------	------	------	------

FORBS

<i>Aster chilensis</i>	0.00	5.00	0.00	0.00	0.00	0.00	15.00
<i>Kochia scoparia</i>	5.00	15.00	15.00	30.00	35.00	35.00	0.00
<i>Grindelia squarrosa</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

<i>Stipa hymenoides</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus cinereus</i>	0.00	0.00	0.00	0.00	0.00	0.00	10.00
<i>Elymus lanceolatus</i>	5.00	5.00	5.00	0.00	0.00	0.00	0.00
<i>Bromus carinatus</i>	5.00	0.00	0.00	0.00	0.00	0.00	0.00

COVER

Total Living Cover	25.00	25.00	20.00	30.00	35.00	35.00	25.00
Litter	5.00	25.00	5.00	5.00	5.00	5.00	5.00
Bareground	5.00	25.00	45.00	20.00	20.00	5.00	5.00
Rock	65.00	25.00	30.00	45.00	40.00	55.00	65.00

% COMPOSITION

Shrubs	40.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	20.00	80.00	75.00	100.00	100.00	100.00	60.00
Grasses	40.00	20.00	25.00	0.00	0.00	0.00	40.00

UP&L-COTTONWOOD MINE
 Parking Lot Slope
 1988 Reveg Interim
 Acreage:
 Slope: 26 deg
 Exposure: E
 Sample Date: 6-10 Sept 94

8.00	9.00	10.00	Mean	SDev	Freq	
0.00	0.00	0.00	1.00	3.00	10.00	SHRUBS <i>Chrysothamnus nauseosus</i>

0.00	25.00	0.00	4.50	8.20	30.00	FORBS
5.00	0.00	0.00	14.00	13.75	70.00	<i>Aster chilensis</i>
5.00	0.00	10.00	1.50	3.20	20.00	<i>Kochia scoparia</i> <i>Grindelia squarrosa</i>

0.00	0.00	25.00	2.50	7.50	10.00	GRASSES
5.00	0.00	0.00	1.50	3.20	20.00	<i>Stipa hymenoides</i>
0.00	0.00	0.00	1.50	2.29	30.00	<i>Elymus cinereus</i>
0.00	0.00	0.00	0.50	1.50	10.00	<i>Elymus lanceolatus</i> <i>Bromus carinatus</i>

15.00	25.00	35.00	27.00	6.40	COVER
5.00	25.00	10.00	9.50	7.89	Total Living Cover
10.00	5.00	10.00	15.00	12.25	Litter
70.00	45.00	45.00	48.50	14.33	Bareground
					Rock

0.00	0.00	0.00	4.00	12.00	% COMPOSITION
66.67	100.00	28.57	73.02	28.22	Shrubs
33.33	0.00	71.43	22.98	22.71	Forbs
					Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Road Silo Pad Slope

AREA: Cottonwood Mine (1988 Reveg. Area)

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: variable

EXPOSURE: variable

ANIMAL USE/DISTURBANCE: slight

EROSION: Under tower and conveyor, the erosion was moderate to severe (see photograph).

COVER: (see quantitative data).

DOMINANT PLANT SPECIES OBSERVED:

Chrysothamnus nauseosus
Atriplex confertifolia

Aster chilensis
Kochia scoparia

Stipa hymenoides

- NOTES:
- 1) Area was active with mine activity and constantly under change. The plant growth is unstable.
 - 2) Cover by composition was > 75% weedy species.
 - 3) Cover was taken in some areas from a distance due to inaccessibility and instability.

UP&L-COTTONWOOD MINE

Road/Silo Pad Slope

1988 Reveg Interim

Acreage: 1.4

Slope: 35 deg

Exposure: SE

Sample Date: 6-10 Sept 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Eriogonum corymbosum</i>	5.00	5.00	0.00	0.00	5.00	0.00	0.00
<i>Chrysothamnus nauseosus</i>	10.00	5.00	5.00	10.00	0.00	10.00	0.00

FORBS

<i>Aster chilensis</i>	5.00	20.00	0.00	25.00	5.00	10.00	30.00
<i>Halogeton glomeratus</i>	5.00	5.00	0.00	0.00	5.00	5.00	0.00
<i>Kochia scoparia</i>	5.00	5.00	0.00	0.00	5.00	0.00	0.00

GRASSES

<i>Stipa hymenoides</i>	0.00	0.00	20.00	0.00	5.00	0.00	20.00
<i>Elymus lanceolatus</i>	5.00	0.00	0.00	0.00	10.00	0.00	0.00

COVER

Total Living Cover	35.00	40.00	25.00	35.00	35.00	25.00	50.00
Litter	5.00	10.00	10.00	5.00	15.00	5.00	10.00
Bareground	10.00	5.00	5.00	15.00	20.00	10.00	5.00
Rock	50.00	45.00	60.00	45.00	30.00	60.00	35.00

% COMPOSITION

Shrubs	42.86	25.00	20.00	28.57	14.29	40.00	0.00
Forbs	42.86	75.00	0.00	71.43	42.86	60.00	60.00
Grasses	14.29	0.00	80.00	0.00	42.86	0.00	40.00

UP&L-COTTONWOOD MINE
 Road/Silo Pad Slope
 1988 Reveg Interim
 Acreage: 1.4
 Slope: 35 deg
 Exposure: SE
 Sample Date: 6-10 Sept 94

8.00	9.00	10.00	Mean	SDev	Freq	
						SHRUBS
0.00	5.00	0.00	2.00	2.45	40.00	<i>Eriogonum corymbosum</i>
0.00	5.00	0.00	4.50	4.15	60.00	<i>Chrysothamnus nauseosus</i>
						FORBS
0.00	5.00	20.00	12.00	10.30	80.00	<i>Aster chilensis</i>
0.00	5.00	0.00	2.50	2.50	50.00	<i>Halogeton glomeratus</i>
10.00	5.00	0.00	3.00	3.32	50.00	<i>Kochia scoparia</i>
						GRASSES
0.00	10.00	0.00	5.50	7.89	40.00	<i>Stipa hymenoides</i>
0.00	0.00	0.00	1.50	3.20	20.00	<i>Elymus lanceolatus</i>
						COVER
10.00	35.00	20.00	31.00	10.68		Total Living Cover
5.00	5.00	5.00	7.50	3.35		Litter
25.00	25.00	25.00	14.50	8.20		Bareground
60.00	35.00	50.00	47.00	10.54		Rock
						% COMPOSITION
0.00	28.57	0.00	19.93	15.25		Shrubs
100.00	42.86	100.00	59.50	28.35		Forbs
0.00	28.57	0.00	20.57	25.74		Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Tipple Area Slope

AREA: Cottonwood Mine (1988 Reveg. Area)

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 35 deg.

EXPOSURE: variable

AREA: .1 acre

ANIMAL USE/DISTURBANCE: negligible

EROSION: Rocks control erosion. Erosion has been reduced by dumping gravel/rock over slopes, but some remains.

COVER: (see quantitative data).

DOMINANT PLANT SPECIES OBSERVED:

Atriplex confertifolia

Chrysothamnus nauseosus

Aster chilensis

Kochia scoparia

Stipa hymenoides

- NOTES:
- 1) We placed quadrats regularly over area.
 - 2) Area is a constantly changing active area. Therefore, unstable for plant growth. It's a difficult place for desirable spp. to become established.
 - 3) Cover by composition was greater than 50% weedy species in some areas, but others had more.

UP&L-COTTONWOOD MINE

Tipple Area Slope

1988 Reveg Interim

Acreage: .1

Slope: 35 deg

Exposure: variable

Sample Date: 6-10 Sept 94

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
--	------	------	------	------	------	------	------

SHRUBS

<i>Chrysothamnus nauseosus</i>	10.00	0.00	10.00	5.00	0.00	0.00	5.00
<i>Atriplex gardneri</i>	0.00	10.00	10.00	0.00	0.00	0.00	0.00
<i>Eriogonum corymbosum</i>	0.00	0.00	0.00	10.00	15.00	5.00	0.00

FORBS

<i>Kochia scoparia</i>	0.00	0.00	10.00	0.00	0.00	0.00	0.00
<i>Halogeton glomeratus</i>	0.00	0.00	0.00	5.00	0.00	5.00	15.00
<i>Aster chilensis</i>	15.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

<i>Elymus lanceolatus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Stipa hymenoides</i>	10.00	30.00	10.00	0.00	0.00	0.00	0.00
<i>Elymus cinereus</i>	15.00	0.00	0.00	0.00	0.00	0.00	0.00

COVER

Total Living Cover	50.00	40.00	40.00	20.00	15.00	10.00	20.00
Litter	10.00	25.00	10.00	5.00	5.00	5.00	5.00
Bareground	10.00	5.00	5.00	20.00	10.00	10.00	5.00
Rock	30.00	30.00	45.00	55.00	70.00	75.00	70.00

% COMPOSITION

Shrubs	20.00	25.00	50.00	75.00	0.00	0.00	0.00
Forbs	30.00	0.00	25.00	25.00	0.00	0.00	0.00
Grasses	50.00	75.00	25.00	0.00	0.00	0.00	0.00

UP&L-COTTONWOOD MINE
 Tipple Area Slope
 1988 Reveg Interim
 Acreage: .1
 Slope: 35 deg
 Exposure: variable
 Sample Date: 6-10 Sept 94

8.00	9.00	10.00	Mean	SDev	Freq	
						SHRUBS
0.00	0.00	0.00	3.00	4.00	40.00	<i>Chrysothamnus nauseosus</i>
0.00	0.00	0.00	2.00	4.00	20.00	<i>Atriplex gardneri</i>
0.00	0.00	0.00	3.00	5.10	30.00	<i>Eriogonum corymbosum</i>
						FORBS
0.00	0.00	0.00	1.00	3.00	10.00	<i>Kochia scoparia</i>
25.00	30.00	25.00	10.50	11.50	60.00	<i>Halogeton glomeratus</i>
0.00	0.00	0.00	1.50	4.50	10.00	<i>Aster chilensis</i>
						GRASSES
0.00	0.00	10.00	1.00	3.00	10.00	<i>Elymus lanceolatus</i>
0.00	0.00	0.00	5.00	9.22	30.00	<i>Stipa hymenoides</i>
0.00	0.00	0.00	1.50	4.50	10.00	<i>Elymus cinereus</i>
						COVER
25.00	30.00	35.00	28.50	12.05		Total Living Cover
10.00	5.00	10.00	9.00	5.83		Litter
5.00	5.00	10.00	8.50	4.50		Bareground
60.00	60.00	45.00	54.00	15.30		Rock
						% COMPOSITION
0.00	0.00	0.00	17.00	25.02		Shrubs
0.00	0.00	0.00	8.00	12.29		Forbs
0.00	0.00	0.00	15.00	25.50		Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Sediment Pond Banks

AREA: Cottonwood Mine (1988 Reveg. Area)

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 35 deg.

EXPOSURE: variable

AREA: .9 acre

ANIMAL USE/DISTURBANCE: None

EROSION: Erosion has been maintained on a regular basis.

COVER: (see quantitative data).

DOMINANT PLANT SPECIES OBSERVED: (see quantitative data)

Atriplex canescens

Chrysothamnus nauseosus

Aster chilensis

Halogeton glomeratus

Kochia scoparia

Machaeranthera canescens

Melilotus officinalis

Salsola pestifer

Elymus lanceolatus

Elymus spicatus

Stipa hymenoides

- NOTES:
- 1) As we've said previously, there has been little change from year to year due to constant use and maintenance.
 - 2) Patchy vegetation growth patterns with some desirable and some weedy species. This is due to erosion control and fluctuating water levels in pond.
 - 3) The species comp. was highly variable. There was a "band" around the pond of desirable spp. and one of weedy spp.
 - 4) Sampled regularly around pond.
 - 5) Regular maintenance of pond disturbs vegetation.

UP&L-COTTONWOOD MINE

Sediment Pond Banks

1988 Reveg Interim

Acreage: .9

Slope: 35 deg

Exposure: variable

Sample Date: 6-10 Sept 94

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
--	------	------	------	------	------	------	------

SHRUBS

Chrysothamnus nauseosus	25.00	0.00	0.00	0.00	0.00	0.00	0.00
-------------------------	-------	------	------	------	------	------	------

FORBS

Aster chilensis	0.00	20.00	0.00	0.00	0.00	0.00	25.00
Grindelia squarrosa	0.00	0.00	30.00	15.00	5.00	0.00	0.00
Medicago sativa	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Helianthus annuus	0.00	0.00	0.00	0.00	30.00	0.00	0.00
Kochia scoparia	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halogeton glomeratus	15.00	0.00	0.00	0.00	5.00	0.00	20.00
Malcomia africana	0.00	0.00	0.00	0.00	0.00	20.00	0.00
Salsola pertifer	0.00	0.00	0.00	0.00	0.00	20.00	0.00

GRASSES

Elymus cinereus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sitanion hystrix	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stipa hymenoides	0.00	20.00	0.00	0.00	0.00	0.00	0.00
Agropyron cristatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	0.00	0.00	0.00	20.00	0.00	0.00	0.00

COVER

Total Living Cover	40.00	40.00	30.00	35.00	40.00	40.00	45.00
Litter	5.00	10.00	5.00	5.00	5.00	5.00	10.00
Bareground	45.00	10.00	35.00	20.00	10.00	10.00	10.00
Rock	10.00	40.00	30.00	40.00	45.00	45.00	35.00

% COMPOSITION

Shrubs	62.50	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	37.50	0.00	100.00	42.86	100.00	100.00	100.00
Grasses	0.00	0.00	0.00	57.14	0.00	0.00	0.00

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	Mean	SDev
25.00	20.00	30.00	0.00	5.00	0.00	0.00	10.00	7.67	10.93
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	7.70
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	8.10
0.00	0.00	0.00	0.00	0.00	0.00	10.00	10.00	1.33	3.40
5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.33	7.50
0.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00	2.67	9.98
0.00	0.00	0.00	0.00	20.00	40.00	0.00	0.00	6.67	11.50
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	4.99
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	4.99
0.00	15.00	0.00	0.00	0.00	0.00	10.00	20.00	3.00	6.27
5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25
5.00	5.00	30.00	0.00	25.00	0.00	0.00	0.00	5.67	9.98
0.00	10.00	0.00	0.00	0.00	0.00	45.00	10.00	4.33	11.38
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	4.99
40.00	50.00	60.00	40.00	50.00	40.00	65.00	50.00	44.33	8.92
5.00	25.00	5.00	5.00	10.00	10.00	5.00	5.00	7.67	5.12
10.00	5.00	5.00	35.00	20.00	20.00	25.00	10.00	18.00	11.80
45.00	20.00	30.00	20.00	20.00	30.00	5.00	35.00	30.00	12.25
62.50	40.00	50.00	0.00	10.00	0.00	0.00	20.00	16.33	23.68
12.50	0.00	0.00	100.00	40.00	100.00	15.38	20.00	51.22	41.86
25.00	60.00	50.00	0.00	50.00	0.00	84.62	60.00	25.78	29.75

UP&L-COTTONWOOD MINE
Sediment Pond Banks
1988 Reveg Interim
Acreage: .9
Slope: 35 deg
Exposure: variable
Sample Date: 6-10 Sept 94

Freq

SHRUBS

40.00 *Chrysothamnus nauseosus*

FORBS

13.33 *Aster chilensis*
20.00 *Grindelia squarrosa*
13.33 *Medicago sativa*
13.33 *Helianthus annuus*
6.67 *Kochia scoparia*
33.33 *Halogeton glomeratus*
6.67 *Malcomia africana*
6.67 *Salsola pertifer*

GRASSES

20.00 *Elymus cinereus*
6.67 *Sitanion hystris*
33.33 *Stipa hymenoides*
20.00 *Agropyron cristatum*
6.67 *Elymus lanceolatus*

COVER

Total Living Cover
Litter
Bareground
Rock

% COMPOSITION

Shrubs
Forbs
Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Cell #1

AREA: Cottonwood Mine Old Waste Rock Area (Interim Reveg)

DATE: August 23-26, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 0-1 deg.

EXPOSURE: E

ANIMAL USE/DISTURBANCE: Heavy deer and rabbit use.

EROSION: None

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see quantitative data)

WOODY SPECIES DENSITY:

	<u>No./Acre</u>
<u>Artemisia tridentata</u>	229.80
<u>Atriplex canescens</u>	804.29
<u>Atriplex confertifolia</u>	76.60
<u>Cercocarpus montanus</u>	76.60
<u>Chrysothamnus nauseosus</u>	153.20
<u>Gutierrezia sarothrae</u>	957.48
Total	<u>2297.97</u>

ANNUAL BIOMASS PRODUCTION:

	<u>Pounds/Acre</u>	<u>Mean</u>	<u>Std Dev</u>	<u>Samp. Size</u>
Herbaceous species		280.09	223.61	6 (30)
Woody species		673.65	250.18	6 (30)
TOTAL		<u>953.74</u>	162.26	6 (30)

- NOTES: 1) Sampled for cover, density & productivity.
2) Placed 3 transects in area and sampled every 20' at right angles from them with random numbers (n=15).

- 3) Used pt. quarter method for density (n=15).
- 4) Used "double-sampling" techniques for productivity. Also did woody spp. & herbaceous spp. production. [n=6(30)].
- 5) Production did not include weeds.
- 6) Because the summer was so dry, production could have been higher other years.

UP&L-COTTONWOOD MINE

Cell #1

Old Waste Rock (Interim Reveg '83)

Slope: 0-1 deg

Exposure: E

Sample Date: 23-26 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Atriplex canescens</i>	0.00	15.00	15.00	10.00	15.00	65.00	0.00
<i>Gutierrezia sarothrae</i>	0.00	5.00	10.00	10.00	0.00	0.00	10.00
<i>Artemisia tridentata</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Atriplex confertifolia</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

<i>Halogeton glomeratus</i>	1.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Sphaeralcea coccinea</i>	0.00	0.00	0.00	0.00	5.00	0.00	0.00
<i>Malcomia africana</i>	4.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

<i>Stipa comata</i>	0.00	0.00	0.00	0.00	10.00	0.00	0.00
<i>Dactylis glomeratus</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00
<i>Elymus lanceolatus</i>	20.00	7.00	5.00	10.00	5.00	0.00	10.00
<i>Agropyron cristatum</i>	0.00	8.00	0.00	15.00	5.00	0.00	10.00
<i>Elymus smithii</i>	0.00	5.00	5.00	0.00	0.00	0.00	10.00
<i>Stipa hymenoides</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00
<i>Bromus carinatus</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00

COVER

Total Living Cover	25.00	40.00	50.00	45.00	40.00	65.00	40.00
Litter	10.00	5.00	10.00	10.00	10.00	20.00	5.00
Bareground	10.00	20.00	10.00	10.00	10.00	10.00	35.00
Rock	55.00	35.00	30.00	35.00	40.00	5.00	20.00

% COMPOSITION

Shrubs	0.00	50.00	50.00	44.44	37.50	100.00	25.00
Forbs	20.00	0.00	0.00	0.00	12.50	0.00	0.00
Grasses	80.00	50.00	50.00	55.56	50.00	0.00	75.00

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	Mean	SDev
5.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	9.00	16.15
0.00	0.00	0.00	0.00	5.00	0.00	10.00	0.00	3.33	4.35
0.00	5.00	0.00	0.00	0.00	0.00	5.00	5.00	1.00	2.00
0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.67	2.49
<hr/>									
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.25
0.00	0.00	5.00	0.00	0.00	0.00	0.00	5.00	1.00	2.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	1.00
<hr/>									
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	2.49
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25
10.00	15.00	5.00	25.00	15.00	5.00	0.00	15.00	9.80	6.87
5.00	10.00	0.00	10.00	5.00	15.00	0.00	10.00	6.20	5.24
0.00	10.00	10.00	0.00	15.00	5.00	0.00	0.00	4.00	4.90
10.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	1.33	2.87
0.00	0.00	0.00	0.00	5.00	5.00	0.00	0.00	1.00	2.00
<hr/>									
30.00	40.00	20.00	45.00	45.00	40.00	20.00	35.00	38.67	11.32
5.00	10.00	5.00	5.00	5.00	10.00	5.00	10.00	8.33	3.94
25.00	15.00	20.00	20.00	20.00	20.00	30.00	25.00	18.67	7.63
40.00	35.00	55.00	30.00	30.00	30.00	45.00	30.00	34.33	12.09
<hr/>									
16.67	12.50	0.00	22.22	11.11	25.00	75.00	14.29	32.25	26.97
0.00	0.00	25.00	0.00	0.00	0.00	0.00	14.29	4.79	8.33
83.33	87.50	75.00	77.78	88.89	75.00	25.00	71.43	62.97	24.04

UP&L-COTTONWO
Cell #1
Old Waste Rock (Int
Slope: 0-1 deg
Exposure: E
Sample Date: 23-26

Freq

SHRUBS

46.67	<i>Atriplex canescens</i>
40.00	<i>Gutierrezia sarothrae</i>
20.00	<i>Artemisia tridentata</i>
6.67	<i>Atriplex confertifolia</i>

FORBS

6.67	<i>Halogeton glomeratus</i>
20.00	<i>Sphaeralcea coccinea</i>
6.67	<i>Malcomia africana</i>

GRASSES

6.67	<i>Stipa comata</i>
6.67	<i>Dactylis glomeratus</i>
86.67	<i>Elymus lanceolatus</i>
66.67	<i>Agropyron cristatum</i>
46.67	<i>Elymus smithii</i>
20.00	<i>Stipa hymenoides</i>
20.00	<i>Bromus carinatus</i>

COVER

Total Living Cover

Litter

Bareground

Rock

% COMPOSITION

Shrubs

Forbs

Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Cell #2

AREA: Cottonwood Mine Waste Rock Area (Interim Reveg)

DATE: August 23-26, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 0-1 deg.

EXPOSURE: E

AREA: ~ 1 acre

ANIMAL USE/DISTURBANCE: Heavy use by wildlife

EROSION: None

COVER: (see quantitative data)

DENSITY:

	<u>No./Acre</u>
<u>Atriplex canescens</u>	834.88
<u>Atriplex confertifolia</u>	53.29
<u>Chrysothamnus nauseosus</u>	17.76
<u>Gutierrezia sarothrae</u>	142.11
<u>Artemisia tridentata</u>	<u>17.76</u>
Total	<u>1065.80</u>

Cell 2 (continued)

ANNUAL BIOMASS PRODUCTION:

	Pounds/Acre	Mean	Std Dev	Samp. Size
Herbaceous species		87.07	70.72	6 (30)
Woody species		332.96	362.07	6 (30)
TOTAL	<u>413.03</u>	335.95		6 (30)

DOMINANT PLANT SPECIES OBSERVED:

Atriplex canescens

Halogeton glomeratus

Melilotus officinalis

Salsola pestifer

Elymus hispidus

Agropyron cristatum

Elymus smithii

Hilaria jamesii

Sitanion hystrix

- NOTES: 1) Sampled for cover (n=15), freq. (n=15), density (n=15) & productivity [6(30)].
- 2) Placed a 200' transect and sampled every 40' at right angles from it.
- 3) Used the point-quarter method for density.
- 4) Used "double-sampling" techniques for productivity. Also did woody spp. & herbaceous spp. production.
- 5) Production did not include weeds.
- 6) Because the summer was so dry, hot and the site used by animals, production could have been higher.
- 7) Some patches of desirable spp.

UP&L-COTTONWOOD MINE

Cell #2

Old Waste Rock (Interim Reveg '83)

Slope: 0-1 deg

Exposure: E

Sample Date: 23-26 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

Atriplex canescens	10.00	0.00	20.00	0.00	0.00	25.00	15.00
--------------------	-------	------	-------	------	------	-------	-------

FORBS

Salsola pestifer	0.00	0.00	0.00	0.00	5.00	0.00	0.00
Malcomia africana	0.00	0.00	0.00	0.00	5.00	0.00	0.00
Halogeton glomeratus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kochia scoparia	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

Stipa hymenoides	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bromus carinatus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sitanion hystrix	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Stipa comata	0.00	0.00	0.00	5.00	20.00	0.00	0.00
Elymus lanceolatus	10.00	10.00	0.00	0.00	0.00	10.00	10.00
Agropyron cristatum	10.00	10.00	15.00	20.00	0.00	5.00	10.00
Elymus smithii	5.00	10.00	5.00	0.00	0.00	0.00	10.00
Bromus tectorum	0.00	5.00	0.00	0.00	0.00	0.00	0.00

COVER

Total Living Cover	35.00	35.00	40.00	30.00	30.00	40.00	45.00
Litter	10.00	5.00	10.00	10.00	10.00	10.00	10.00
Bareground	20.00	20.00	20.00	35.00	25.00	15.00	20.00
Rock	35.00	40.00	30.00	25.00	35.00	35.00	25.00

% COMPOSITION

Shrubs	28.57	0.00	50.00	0.00	0.00	62.50	33.33
Forbs	0.00	0.00	0.00	0.00	33.33	0.00	0.00
Grasses	71.43	100.00	50.00	100.00	66.67	37.50	66.67

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	Mean	SDev
10.00	0.00	0.00	0.00	60.00	0.00	60.00	0.00	13.33	19.97
0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.67	1.70
10.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	1.33	2.87
10.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	5.42
0.00	0.00	5.00	0.00	0.00	0.00	0.00	20.00	1.67	5.06
0.00	0.00	0.00	5.00	0.00	10.00	0.00	5.00	1.33	2.87
0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	1.00	3.74
0.00	5.00	5.00	0.00	0.00	0.00	0.00	0.00	1.00	2.00
0.00	0.00	10.00	5.00	0.00	0.00	0.00	0.00	2.67	5.44
0.00	0.00	0.00	10.00	5.00	10.00	0.00	0.00	4.33	4.78
5.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	5.67	6.29
0.00	0.00	0.00	10.00	0.00	0.00	5.00	0.00	3.00	4.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25
35.00	25.00	25.00	45.00	75.00	20.00	65.00	30.00	38.33	14.34
10.00	5.00	10.00	10.00	5.00	5.00	5.00	10.00	8.33	2.36
25.00	20.00	45.00	25.00	10.00	25.00	15.00	35.00	23.67	8.65
30.00	50.00	20.00	20.00	10.00	50.00	15.00	25.00	29.67	11.18
28.57	0.00	0.00	0.00	80.00	0.00	92.31	0.00	25.02	31.29
57.14	80.00	40.00	0.00	0.00	0.00	0.00	83.33	19.59	30.07
14.29	20.00	60.00	100.00	20.00	100.00	7.69	16.67	55.39	33.48

UP&L-COTTONWOOD MINE
Cell #2
Old Waste Rock (Interim Reve
Slope: 0-1 deg
Exposure: E
Sample Date: 23-26 Aug 94

Freq

SHRUBS

46.67 Atriplex canescens

FORBS

13.33 Salsola pestifer
20.00 Malcomia africana
13.33 Halogeton glomeratus
13.33 Kochia scoparia

GRASSES

20.00 Stipa hymenoides
6.67 Bromus carinatus
20.00 Sitanion hystris
26.67 Stipa comata
46.67 Elymus lanceolatus
53.33 Agropyron cristatum
40.00 Elymus smithii
6.67 Bromus tectorum

COVER

Total Living Cover

Litter

Bareground

Rock

% COMPOSITION

Shrubs

Forbs

Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Cell #2 ("Problem Area")

AREA: Cottonwood Mine Waste Rock Area (Interim Reveg)

DATE: August 23-26, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 0-1 deg.

EXPOSURE: E

AREA: ~ 1 acre

ANIMAL USE/DISTURBANCE: Heavy use by wildlife

EROSION: None

COVER: (see quantitative data)

DENSITY:

	<u>No./Acre</u>
<u>Atriplex canescens</u>	1262.61
<u>Atriplex confertifolia</u>	157.83
<u>Gutierrezia sarothrae</u>	473.48
Total	<u>1893.92</u>

DOMINANT PLANT SPECIES OBSERVED:

Atriplex canescens
Gutierrezia sarothrae

Halogekton glomeratus
Melilotus officinalis
Salsola pestifer

Elymus hispidus
Bromus carinatus
Elymus lanceolatus
Bromus tectorum
Agropyron cristatum
Elymus smithii
Hilaria jamesii
Sitanion hystrix

Cell #2 (continued)
"Problem Area"
1994

- NOTES:
- 1) This area within Cell 2 had been suspected of having toxicity problems, so we sampled it separately.
 - 2) We sampled for cover and density
 - 3) Sampled around soil markers "G, F & H"
 - 4) G & F had large saltbushes that appeared to be dying (but could be a strategy for survival from the dry year).
 - 5) H had a lot of halogeton

UP&L-COTTONWOOD MINE

Cell #2 (Problem Area)

Old Waste Rock (Interim Reveg '83)

Slope: 0-1 deg

Exposure: E

Sample Date: 23-26 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

Atriplex canescens	0.00	0.00	10.00	0.00	10.00	0.00	0.00
Atriplex confertifolia	0.00	0.00	0.00	2.00	0.00	0.00	0.00
Gutierrezia sarothrae	0.00	0.00	0.00	0.00	5.00	0.00	5.00

FORBS

Halogenon glomeratus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malcomia africana	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salsola pestifer	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

Bromus carinatus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sitanion hystric	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus smithii	0.00	0.00	0.00	0.00	0.00	0.00	5.00
Elymus hispidus	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Elymus lanceolatus	15.00	15.00	0.00	18.00	5.00	0.00	0.00
Agropyron cristatum	10.00	15.00	20.00	0.00	15.00	10.00	0.00
Bromus tectorum	0.00	0.00	0.00	0.00	0.00	5.00	15.00

COVER

Total Living Cover	25.00	30.00	30.00	25.00	35.00	15.00	25.00
Litter	5.00	5.00	20.00	10.00	5.00	15.00	10.00
Bareground	35.00	30.00	30.00	20.00	35.00	35.00	40.00
Rock	35.00	35.00	20.00	45.00	25.00	35.00	25.00

% COMPOSITION

Shrubs	0.00	0.00	33.33	8.00	42.86	0.00	20.00
Forbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	100.00	100.00	66.67	92.00	57.14	100.00	80.00

UP&L-CO
Cell #2 (P
Old Wast
Slope: 0-
Exposure:
Sample D

8.00	9.00	10.00	11.00	12.00	Mean	SDev	Freq	
60.00	10.00	10.00	0.00	0.00	8.33	16.24	41.67	SHRUBS
0.00	0.00	0.00	0.00	0.00	0.17	0.55	8.33	Atriplex c
0.00	0.00	0.00	0.00	0.00	0.83	1.86	16.67	Atriplex c
								Gutierrezi
0.00	0.00	8.00	10.00	18.00	3.00	5.63	25.00	FORBS
0.00	0.00	0.00	5.00	0.00	0.42	1.38	8.33	Halogeton
0.00	0.00	0.00	0.00	2.00	0.17	0.55	8.33	Malcomia
								Salsola p
0.00	5.00	0.00	0.00	0.00	0.42	1.38	8.33	GRASSE
0.00	2.00	0.00	0.00	0.00	0.17	0.55	8.33	Bromus c
0.00	5.00	0.00	0.00	0.00	0.83	1.86	16.67	Sitanion h
0.00	0.00	0.00	0.00	0.00	0.42	1.38	8.33	Elymus s
0.00	3.00	0.00	0.00	0.00	4.67	6.75	41.67	Elymus hi
5.00	0.00	7.00	0.00	5.00	7.25	6.57	16.67	Elymus la
0.00	0.00	0.00	0.00	0.00	1.67	4.25	16.67	Agropyro
								Bromus t
65.00	25.00	25.00	15.00	25.00	28.33	12.30		COVER
10.00	5.00	5.00	5.00	10.00	8.75	4.62		Total Livi
15.00	35.00	15.00	25.00	25.00	28.33	7.99		Litter
10.00	35.00	55.00	55.00	40.00	34.58	12.82		Baregrou
								Rock
92.31	40.00	40.00	0.00	0.00	23.04	27.02		% COMP
0.00	0.00	32.00	100.00	80.00	17.67	33.76		Shrubs
7.69	60.00	28.00	0.00	20.00	59.29	35.63		Forbs
								Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Cell #3

AREA: Cottonwood Mine Waste Rock Area (Interim Reveg)

DATE: August 23-26, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 0-1 deg.

EXPOSURE: E

ANIMAL USE/DISTURBANCE: Last year we reported "heavy use by wildlife. I think the deer use the PJ cover all day. Then in late evening and early morning's really utilize this open area."

This year there seemed to be less use.

EROSION: None

COVER: (see quantitative data)

DENSITY:

	<u>No./Acre</u>
<u>Atriplex canescens</u>	1137.23
<u>Chrysothamnus nauseosus</u>	101.09
<u>Gutierrezia sarothrae</u>	277.99

Total 1516.31

ANNUAL BIOMASS PRODUCTION:

	<u>Pounds/Acre</u>	<u>Mean</u>	<u>Std Dev</u>	<u>Samp. Size</u>
Herbaceous species		306.52	142.66	6 (30)
Woody species		495.39	273.23	6 (30)
TOTAL		<u>801.91</u>	318.73	6 (30)

Cell 3 (continued)

DOMINANT PLANT SPECIES OBSERVED:

Atriplex canescens

Atriplex cuneata

Halogeton glomeratus

Melilotus officinalis

Salsola pestifer

Elymus hispidus

Elymus smithii

Agropyron cristatum

Hilaria jamesii

Stipa comata

NOTES:

- 1) Like 1993, there was more density of shrubs than Cell 2. Cell 1 sample results indicated yet more there.
- 2) Also, this appeared the best cell when compared to Cells 1 & 2.
- 3) Condition: excellent
- 4) Site looked better this year when compared to previous years.
- 5) The decreased animal use helped.
- 6) Site had good diversity of grasses.
- 7) To place quadrats, a transect was put in the center of the cell. Random numbers were then chosen at right angles to it.
- 8) Sampled for cover (n=15), freq. (n=15), density (n=15) & productivity [6(30)].
- 9) Used the point-quarter method for density.
- 10) Used "double-sampling" techniques for productivity. Also did woody spp. & herbaceous spp. production.
- 5) Production did not include weeds.

UP&L-COTTONWOOD MINE**Cell #3****Old Waste Rock (Interim Reveg '83)****Slope: 1-2 deg****Exposure: E****Sample Date: 23-26 Aug 94**

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Atriplex canescens</i>	0.00	5.00	0.00	0.00	30.00	0.00	20.00
<i>Gutierrezia sarothrae</i>	10.00	0.00	0.00	0.00	0.00	0.00	10.00
<i>Chrysothamnus nauseosus</i>	0.00	0.00	0.00	20.00	0.00	0.00	0.00

FORBS**GRASSES**

<i>Bromus tectorum</i>	0.00	0.00	0.00	0.00	0.00	0.00	5.00
<i>Hilaria jamesii</i>	0.00	0.00	5.00	5.00	0.00	15.00	0.00
<i>Stipa comata</i>	0.00	0.00	10.00	5.00	0.00	5.00	5.00
<i>Agropyron cristatum</i>	10.00	0.00	5.00	0.00	0.00	0.00	0.00
<i>Elymus smithii</i>	10.00	10.00	0.00	10.00	10.00	5.00	0.00
<i>Elymus lanceolatus</i>	10.00	15.00	5.00	5.00	10.00	5.00	0.00
<i>Stipa hymenoides</i>	5.00	10.00	15.00	5.00	0.00	5.00	10.00
<i>Bromus carinatus</i>	0.00	0.00	0.00	0.00	5.00	0.00	0.00

COVER

Total Living Cover	45.00	40.00	40.00	50.00	55.00	35.00	50.00
Litter	10.00	5.00	15.00	10.00	20.00	10.00	10.00
Bareground	15.00	5.00	5.00	10.00	10.00	10.00	10.00
Rock	30.00	50.00	40.00	30.00	15.00	45.00	30.00

% COMPOSITION

Shrubs	22.22	12.50	0.00	40.00	54.55	0.00	60.00
Forbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	77.78	87.50	100.00	60.00	45.45	100.00	40.00

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	Mean	SDev
35.00	20.00	30.00	25.00	0.00	0.00	5.00	0.00	11.33	13.10
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	3.40
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	4.99
0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.67	1.70
0.00	0.00	0.00	0.00	10.00	0.00	0.00	5.00	2.67	4.42
0.00	0.00	5.00	10.00	15.00	0.00	5.00	5.00	4.33	4.42
0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	1.33	2.87
15.00	10.00	0.00	5.00	10.00	20.00	0.00	20.00	8.33	6.50
10.00	10.00	10.00	10.00	10.00	20.00	0.00	15.00	9.00	5.23
0.00	10.00	0.00	0.00	0.00	0.00	20.00	5.00	5.67	6.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25
60.00	50.00	50.00	50.00	45.00	40.00	35.00	50.00	46.33	6.94
20.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	11.33	3.86
5.00	5.00	5.00	10.00	15.00	20.00	20.00	10.00	10.33	4.99
15.00	35.00	35.00	30.00	30.00	30.00	35.00	30.00	32.00	8.91
58.33	40.00	60.00	50.00	0.00	0.00	14.29	0.00	27.46	24.25
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41.67	60.00	40.00	50.00	100.00	100.00	85.71	100.00	72.54	24.25

UP&L-COTTONWOOD MINE
Cell #3
Old Waste Rock (Interim Reve
Slope: 1-2 deg
Exposure: E
Sample Date: 23-26 Aug 94

Freq

SHRUBS

53.33	<i>Atriplex canescens</i>
13.33	<i>Gutierrezia sarothrae</i>
6.67	<i>Chrysothamnus nauseosus</i>

FORBS

GRASSES

13.33	<i>Bromus tectorum</i>
33.33	<i>Hilaria jamesii</i>
60.00	<i>Stipa comata</i>
20.00	<i>Agropyron cristatum</i>
73.33	<i>Elymus smithii</i>
86.67	<i>Elymus lanceolatus</i>
60.00	<i>Stipa hymenoides</i>
6.67	<i>Bromus carinatus</i>

COVER

Total Living Cover

Litter

Bareground

Rock

% COMPOSITION

Shrubs

Forbs

Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Cell #4

AREA: Cottonwood Mine Waste Rock Area (Interim Reveg)

DATE: August 23-26, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 1 - 2 deg

EXPOSURE: E

ANIMAL USE/DISTURBANCE: Deer use extensively now. I think the deer (& rabbits) use the PJ cover all day. Then in late evening and early morning's they really utilize this open area.

EROSION: None

COVER: Approx. 35%

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

Gutierrezia sarothraeae

Cercocarpus montanus

Chrysothamnus nauseosus

Halogeton glomeratus

Sphaeralcea coccinea

Salsola pestifer

Elymus hipsidus

Elymus smithii

Agropyron cristatum

Hilaria jamesii

Stipa comata

Bromus tectorum

Bromus carinatus

- NOTES:
- 1) Qualitative sampling only. Estimated cover by visual inspection only (no quadrats).
 - 2) Excellent grass cover and diversity
 - 3) Much fewer shrubs than #3
 - 4) Shrubs were small, but seemed to be increasing.

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Berm 1

AREA: Cottonwood Mine Waste Rock Area (Interim Reveg)

DATE: August 23-26, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 1-2 deg.

EXPOSURE: E

ANIMAL USE/DISTURBANCE: Heavy use by wildlife

EROSION: Negligible

COVER: (see quantitative data)

DENSITY:

	<u>No./Acre</u>
<u>Atriplex canescens</u>	325.36
<u>Chrysothamnus nauseosus</u>	859.88
<u>Ephedra viridis</u>	139.44
<u>Gutierrezia sarothrae</u>	197.54
<u>Purshia tridentata</u>	11.62
Total	<u>1533.84</u>

ANNUAL BIOMASS PRODUCTION:

	<u>Pounds/Acre</u>	<u>Mean</u>	<u>Std Dev</u>	<u>Samp. Size</u>
Herbaceous species	26.66	38.18	6 (30)	
Woody species	60.58	66.34	6 (30)	
TOTAL	<u>87.23</u>	66.15	6 (30)	

Berm 1 (continued)
1994

DOMINANT PLANT SPECIES OBSERVED:

Atriplex canescens
Gutierrezia sarothrae

Halogeton glomeratus
Malcomia africana
Salsola pestifer

Elymus lanceolatus
Bromus tectorum
Agropyron cristatum
Elymus smithii
Sitanion hystrrix

- NOTES:
- 1) Poor shrub and perennial forb establishment.
There were quite a few exotic weeds.
 - 2) We sampled for cover, frequency, production, and density.
 - 3) For production we "double sampled" on the top and sides of the berms. We did not include weedy spp.
 - 4) For density we used 5'X50' belt transects. The point-quarter method would have been impractical.

UP&L-COTTONWOOD MINE

Berm #1

Old Waste Rock (Interim Reveg '83)

Slope: 1-2 deg

Exposure: E

Sample Date: 23-26 Aug 94

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
--	------	------	------	------	------	------	------

SHRUBS

Atriplex canescens	0.00	0.00	0.00	0.00	10.00	0.00	0.00
Ephedra viridis	0.00	0.00	5.00	0.00	0.00	0.00	0.00
Chrysothamnus nauseosus	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

Salsola pestifer	0.00	5.00	0.00	0.00	0.00	0.00	0.00
Halogeton glomeratus	5.00	5.00	0.00	0.00	0.00	0.00	0.00
Malcomia africana	15.00	0.00	30.00	0.00	20.00	15.00	20.00

GRASSES

Bromus tectorum	0.00	0.00	0.00	0.00	0.00	5.00	0.00
Agropyron cristatum	0.00	0.00	0.00	0.00	5.00	5.00	0.00
Elymus lanceolatus	5.00	5.00	0.00	10.00	5.00	5.00	10.00
Stipa hymenoides	0.00	0.00	0.00	10.00	0.00	0.00	0.00
Elymus smithii	0.00	0.00	0.00	20.00	0.00	0.00	0.00

COVER

Total Living Cover	25.00	15.00	35.00	40.00	40.00	30.00	30.00
Litter	20.00	5.00	5.00	5.00	5.00	5.00	10.00
Bareground	20.00	10.00	5.00	10.00	10.00	10.00	15.00
Rock	35.00	70.00	55.00	45.00	45.00	55.00	45.00

% COMPOSITION

Shrubs	0.00	0.00	14.29	0.00	25.00	0.00	0.00
Forbs	80.00	66.67	85.71	0.00	50.00	50.00	66.67
Grasses	20.00	33.33	0.00	100.00	25.00	50.00	33.33

	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	Mean	SDev
	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	5.42
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25
	0.00	0.00	5.00	0.00	10.00	0.00	5.00	0.00	1.33	2.87
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25
	0.00	5.00	20.00	5.00	0.00	0.00	0.00	0.00	2.67	5.12
	5.00	0.00	5.00	13.00	25.00	35.00	30.00	30.00	16.20	11.78
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25
	10.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	2.67	5.44
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.67	3.59
	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00	1.13	2.94
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	4.99
	35.00	25.00	30.00	25.00	35.00	35.00	35.00	30.00	31.00	6.38
	5.00	5.00	5.00	5.00	10.00	5.00	5.00	5.00	6.67	3.94
	20.00	10.00	5.00	25.00	20.00	10.00	10.00	10.00	12.67	5.73
	40.00	60.00	60.00	45.00	35.00	50.00	50.00	55.00	49.67	9.39
	57.14	0.00	16.67	0.00	28.57	0.00	14.29	0.00	10.40	15.86
	14.29	20.00	83.33	72.00	71.43	100.00	85.71	100.00	63.05	29.64
	28.57	80.00	0.00	28.00	0.00	0.00	0.00	0.00	26.55	29.64

UP&L-COTTONWOOD MINE
Berm #1
Old Waste Rock (Interim Reve
Slope: 1-2 deg
Exposure: E
Sample Date: 23-26 Aug 94

Freq

SHRUBS

13.33 *Atriplex canescens*
6.67 *Ephedra viridis*
20.00 *Chrysothamnus nauseosus*

FORBS

6.67 *Salsola pestifer*
33.33 *Halogeton glomeratus*
80.00 *Malcomia africana*

GRASSES

6.67 *Bromus tectorum*
26.67 *Agropyron cristatum*
40.00 *Elymus lanceolatus*
13.33 *Stipa hymenoides*
6.67 *Elymus smithii*

COVER

Total Living Cover

Litter

Bareground

Rock

% COMPOSITION

Shrubs

Forbs

Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Berm 2

AREA: Cottonwood Mine Waste Rock Area (Interim Reveg)

DATE: August 23-26, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 0-1 deg.

EXPOSURE: E

ANIMAL USE/DISTURBANCE: Heavy use by wildlife

EROSION: None

COVER: (see quantitative data)

DENSITY:

	<u>No./Acre</u>
<u>Atriplex canescens</u>	1917.30
<u>Atriplex confertifolia</u>	406.70
<u>Chrysothamnus nauseosus</u>	34.86
<u>Ephedra viridis</u>	11.62
<u>Gutierrezia sarothrae</u>	4241.30
Total	<u>6611.78</u>

ANNUAL BIOMASS PRODUCTION:

	<u>Pounds/Acre</u>	<u>Mean</u>	<u>Std Dev</u>	<u>Samp. Size</u>
Herbaceous species	586.77	525.62	6 (30)	
Woody species	<u>2056.86</u>	<u>2177.79</u>	<u>6 (30)</u>	
TOTAL	<u>2643.62</u>	2628.66	6 (30)	

Berm 2 (continued)
1994

DOMINANT PLANT SPECIES OBSERVED:

Atriplex confertifolia

Atriplex canescens

Gutierrezia sarothrae

Elymus hispidus

Elymus lanceolatus

Agropyron cristatum

Elymus smithii

- NOTES:
- 1) Very good shrub and grass cover and density.
 - 2) We sampled for cover, frequency, production, and density.
 - 3) We put two 200' transects down and sampled with random numbers every 20' for cover.
 - 3) For production we "double sampled" on the top and sides of the berm. We did not include weedy spp.
 - 4) For density we used 5'X50' belt transects. The point-quarter method would have been impractical.

UP&L-COTTONWOOD MINE

Berm #2

Old Waste Rock (Interim Reveg '83)

Slope: 0 deg

Exposure: E

Sample Date: 23-26 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

Atriplex canescens	0.00	35.00	0.00	65.00	15.00	0.00	30.00
Atriplex confertifolia	35.00	0.00	0.00	0.00	0.00	40.00	0.00
Gutierrezia sarothrae	0.00	5.00	0.00	0.00	0.00	0.00	0.00

FORBS**GRASSES**

Bromus tectorum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus hispidus	0.00	10.00	5.00	0.00	0.00	0.00	20.00
Elymus lanceolatus	5.00	0.00	0.00	5.00	10.00	5.00	0.00
Agropyron cristatum	10.00	0.00	30.00	5.00	5.00	5.00	5.00
Elymus smithii	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COVER

Total Living Cover	50.00	50.00	35.00	75.00	30.00	50.00	55.00
Litter	10.00	10.00	10.00	15.00	5.00	5.00	10.00
Bareground	10.00	10.00	5.00	5.00	10.00	20.00	10.00
Rock	30.00	30.00	50.00	5.00	55.00	25.00	25.00

% COMPOSITION

Shrubs	70.00	80.00	0.00	86.67	50.00	80.00	54.55
Forbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	30.00	20.00	100.00	13.33	50.00	20.00	45.45

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	Mean	SDev
30.00	15.00	0.00	35.00	20.00	0.00	10.00	10.00	17.67	17.97
0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	5.67	12.76
0.00	5.00	0.00	0.00	10.00	35.00	10.00	0.00	4.33	8.92
0.00	0.00	10.00	0.00	0.00	5.00	0.00	0.00	1.00	2.71
0.00	20.00	0.00	20.00	0.00	0.00	0.00	0.00	5.00	7.96
5.00	5.00	0.00	10.00	0.00	0.00	5.00	5.00	3.67	3.40
10.00	0.00	25.00	0.00	30.00	0.00	5.00	0.00	8.67	10.40
5.00	0.00	0.00	0.00	0.00	0.00	5.00	20.00	2.00	5.10
50.00	45.00	35.00	65.00	60.00	40.00	35.00	45.00	48.00	11.94
10.00	15.00	15.00	10.00	10.00	15.00	5.00	10.00	10.33	3.40
15.00	5.00	5.00	5.00	15.00	15.00	15.00	15.00	10.67	4.78
25.00	35.00	45.00	20.00	15.00	30.00	45.00	30.00	31.00	12.94
60.00	44.44	0.00	53.85	50.00	87.50	57.14	44.44	54.57	25.67
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.00	55.56	100.00	46.15	50.00	12.50	42.86	55.56	45.43	25.67

UP&L-COTTONWOOD MINE
Berm #2
Old Waste Rock (Interim Reve
Slope: 0 deg
Exposure: E
Freq Sample Date: 23-26 Aug 94

SHRUBS

66.67 *Atriplex canescens*
20.00 *Atriplex confertifolia*
33.33 *Gutierrezia sarothrae*

FORBS

GRASSES

13.33 *Bromus tectorum*
33.33 *Elymus hispidus*
60.00 *Elymus lanceolatus*
66.67 *Agropyron cristatum*
20.00 *Elymus smithii*

COVER

Total Living Cover

Litter

Bareground

Rock

% COMPOSITION

Shrubs

Forbs

Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Berm 3

AREA: Cottonwood Mine Waste Rock Area (Interim Reveg)

DATE: August 23-26, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 0-1 deg.

EXPOSURE: E

ANIMAL USE/DISTURBANCE: Heavy use by wildlife

EROSION: Negligible

COVER: (see quantitative data)

DENSITY:

	No./Acre
<u>Atriplex canescens</u>	3056.06
<u>Chrysothamnus nauseosus</u>	<u>11.62</u>
Total	<u>3067.68</u>

ANNUAL BIOMASS PRODUCTION:

	Pounds/Acre		
	Mean	Std Dev	Samp. Size
Herbaceous species	355.56	263.38	6 (30)
Woody species	1713.04	977.81	6 (30)
TOTAL	<u>2068.61</u>	1205.03	6 (30)

Berm 3 (continued)
1994

DOMINANT PLANT SPECIES OBSERVED:

Atriplex canescens
Gutierrezia sarothrae
Artemesia tridentata
Ephedra viridis

Halogeton glomeratus
Salsola pestifer

Stipa hymenoides
Stipa comata
Poa pratensis
Bromus tectorum
Elymus lanceolatus
Bromus tectorum
Agropyron cristatum
Elymus smithii

- NOTES:
- 1) Had good shrub cover, but poor to fair grass cover entire length of berm.
 - 2) We put down four 200 ft transects for cover and sampled using random numbers every 50 ft.
 - 3) For density we used 5 ft x 50 ft belts placed over the entire length of the berm.
 - 4) We sampled on the top and both side slopes of the berm for cover and density,
 - 5) For production we "double sampled" on the top and sides of berm. We did not include weedy spp.

UP&L-COTTONWOOD MINE

Berm #3

Old Waste Rock (Interim Reveg '83)

Slope: 0-1 deg

Exposure: E

Sample Date: 23-26 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Atriplex canescens</i>	15.00	0.00	40.00	35.00	40.00	25.00	0.00
<i>Ephedra viridis</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Artemesia tridentata</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

<i>Salsola pestifer</i>	0.00	30.00	0.00	5.00	0.00	0.00	0.00
<i>Kochia scoparia</i>	0.00	0.00	0.00	0.00	0.00	0.00	5.00

GRASSES

<i>Stipa hymenoides</i>	0.00	0.00	0.00	0.00	5.00	0.00	0.00
<i>Stipa comata</i>	0.00	0.00	0.00	0.00	5.00	0.00	0.00
<i>Poa pratensis</i>	0.00	10.00	0.00	0.00	0.00	0.00	0.00
<i>Bromus tectorum</i>	10.00	0.00	0.00	5.00	0.00	0.00	5.00
<i>Elymus lanceolatus</i>	10.00	10.00	10.00	0.00	5.00	5.00	25.00
<i>Agropyron cristatum</i>	15.00	0.00	0.00	5.00	5.00	5.00	0.00
<i>Agropyron smithii</i>	0.00	0.00	0.00	0.00	0.00	5.00	5.00

COVER

Total Living Cover	50.00	50.00	50.00	50.00	60.00	40.00	40.00
Litter	10.00	10.00	25.00	25.00	5.00	5.00	5.00
Bareground	10.00	5.00	5.00	5.00	5.00	10.00	15.00
Rock	30.00	35.00	20.00	20.00	30.00	45.00	40.00

% COMPOSITION

Shrubs	30.00	0.00	80.00	70.00	66.67	62.50	0.00
Forbs	0.00	60.00	0.00	10.00	0.00	0.00	12.50
Grasses	70.00	40.00	20.00	20.00	33.33	37.50	87.50

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	Mean	SDev
0.00	30.00	50.00	25.00	25.00	15.00	55.00	50.00	27.00	17.78
5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25
0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.67	2.49
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.33	7.50
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25
0.00	0.00	10.00	10.00	0.00	0.00	0.00	0.00	1.67	3.50
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	2.49
0.00	20.00	0.00	0.00	0.00	0.00	10.00	0.00	3.33	5.68
20.00	0.00	0.00	10.00	5.00	10.00	0.00	0.00	7.33	7.27
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	4.00
20.00	0.00	0.00	5.00	5.00	0.00	0.00	0.00	2.67	5.12
45.00	50.00	60.00	50.00	35.00	35.00	65.00	50.00	48.67	8.46
10.00	25.00	5.00	25.00	20.00	10.00	25.00	10.00	14.33	8.34
15.00	5.00	5.00	5.00	5.00	25.00	5.00	5.00	8.33	5.68
30.00	20.00	30.00	20.00	40.00	30.00	5.00	35.00	28.67	9.91
11.11	60.00	83.33	50.00	71.43	71.43	84.62	100.00	56.07	30.46
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.50	15.06
88.89	40.00	16.67	50.00	28.57	28.57	15.38	0.00	38.43	25.13

UP&L-COTTONWOOD MINE
Berm #3
Old Waste Rock (Interim Reve
Slope: 0-1 deg
Exposure: E
Freq Sample Date: 23-26 Aug 94

SHRUBS

80.00	<i>Atriplex canescens</i>
6.67	<i>Ephedra viridis</i>
6.67	<i>Artemisia tridentata</i>

FORBS

13.33	<i>Salsola pestifer</i>
6.67	<i>Kochia scoparia</i>

GRASSES

20.00	<i>Stipa hymenoides</i>
6.67	<i>Stipa comata</i>
6.67	<i>Poa pratensis</i>
33.33	<i>Bromus tectorum</i>
66.67	<i>Elymus lanceolatus</i>
26.67	<i>Agropyron cristatum</i>
33.33	<i>Agropyron smithii</i>

COVER

Total Living Cover

Litter

Bareground

Rock

% COMPOSITION

Shrubs

Forbs

Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Berm 4

AREA: Cottonwood Mine Waste Rock Area (Interim Reveg)

DATE: August 23-26, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 0-1 deg.

EXPOSURE: E

ANIMAL USE/DISTURBANCE: Heavy use by wildlife

EROSION: None

COVER: (approximately 40%)

DOMINANT PLANT SPECIES OBSERVED:

Atriplex canescens
Chrysothamnus nauseosus
Gutierrezia sarothrae

Melilotus alba
Kochia scoparia
Salsola pestifer

Elymus spicatus
Elymus lanceolatus
Bromus tectorum
Agropyron cristatum
Stipa hymenoides
Stipa comata

- NOTES:
- 1) North side has excellent growth and diversity.
 - 2) The east and south sides were fair with more weedy species present.
 - 3) Some erosion control mat still remained in place.
 - 4) We only recorded qualitative data.

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: CTW Reference Area

AREA: Cottonwood Mine Waste Rock Area (OLD)

DATE: August 23-26, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 1 - 5 deg

EXPOSURE: E

ANIMAL USE/DISTURBANCE: Deer use common

EROSION: slight

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

Cercocarpus montanus

Ephedra viridis

Juniperus osteosperma

Opuntia polyacantha

Pinus edulis

Yucca harrimaniae

Eriogonum bicolor

Euphorbia fendleri

Penstemon pachyphyllus

DENSITY:	NO./ACRE
<u>Cercocarpus montanus</u>	89.03
<u>Ephedra viridis</u>	168.17
<u>Gutierrezia sarothrae</u>	9.89
<u>Juniperus osteosperma</u>	445.15
<u>Opuntia polyacantha</u>	89.03
<u>Pinus edulis</u>	326.44
<u>Yucca harrimaniae</u>	<u>59.35</u>
TOTAL	<u>1187.06</u>

Page 2
CTW Reference Area
1994

ANNUAL BIOMASS PRODUCTION:

	Pounds/Acre		
	<u>Mean</u>	<u>Std Dev</u>	<u>Samp. Size</u>
Herbaceous species	211.46	124.71	15 (75)
Woody species	149.86	366.23	15 (75)
TOTAL	<u>361.32</u>	419.99	15 (75)

- NOTES:
- 1) Cover estimated with m^2 quadrats (ocular).
 - 2) Density estimated by pt. quarter method.
 - 3) Production estimated by double sampling.
 - 4) We placed 300' transect lines through the reference area.
 - 5) Cover, density and frequency were recorded every 10 ft with random numbers at rt. angles from the transect lines.
 - 6) Production was recorded by clipping and weighing current year's growth. Production was recorded for understory only, not overstory.
 - 7) Overstory was recorded separately. Therefore, total cover could exceed 100%.
 - 8) This was a dry year for vegetation.

UP&L-COTTONWOOD MINE

CTW Reference Area

Old Waste Rock Area

Slope 1-5 deg

Exposure: E

Sample Date: 22-26 Aug 94

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
--	------	------	------	------	------	------	------

SHRUBS

<i>Pinus edulis</i>	20.00	7.00	38.00	7.00	30.00	0.00	0.00
<i>Cercocarpus montanus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Juniperus osteosperma</i>	0.00	0.00	0.00	0.00	0.00	15.00	30.00
<i>Yucca harrimaniae</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Ephedra viridis</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

<i>Opuntia polyacantha</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00
<i>Eriogonum bicolor</i>	0.00	3.00	0.00	3.00	0.00	0.00	3.00
<i>Euphorbia fendleri</i>	0.00	0.00	1.00	0.00	0.00	0.00	0.00
<i>Penstemon</i> sp.	0.00	0.00	1.00	0.00	0.00	0.00	2.00
<i>Cryptantha</i> sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

COVER

Overstory	0.00	0.00	20.00	0.00	0.00	0.00	15.00
Understory	20.00	10.00	45.00	10.00	30.00	15.00	35.00
Litter	10.00	25.00	30.00	20.00	30.00	10.00	25.00
Bareground	25.00	15.00	5.00	20.00	30.00	10.00	20.00
Rock	45.00	50.00	20.00	50.00	10.00	65.00	20.00

% COMPOSITION

Shrubs	100.00	70.00	58.46	70.00	100.00	100.00	60.00
Forbs	0.00	30.00	10.77	30.00	0.00	0.00	10.00
Grasses	0.00	0.00	0.00	0.00	0.00	0.00	0.00

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00
20.00	0.00	15.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.00
20.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	15.00	0.00
0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
0.00	5.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	5.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	0.00	55.00	0.00	0.00	20.00	0.00	0.00	40.00	0.00
40.00	10.00	15.00	10.00	25.00	25.00	10.00	10.00	15.00	35.00
25.00	5.00	70.00	10.00	25.00	50.00	20.00	45.00	20.00	25.00
25.00	10.00	10.00	50.00	25.00	10.00	50.00	25.00	25.00	15.00
10.00	75.00	5.00	30.00	25.00	15.00	20.00	20.00	40.00	25.00
66.67	0.00	21.43	50.00	100.00	55.56	100.00	0.00	27.27	100.00
0.00	100.00	0.00	50.00	0.00	0.00	0.00	100.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00
0.00	20.00	0.00	30.00	10.00	15.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	10.00	0.00
0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
0.00	35.00	0.00	25.00	0.00	10.00	0.00	0.00	0.00	0.00
10.00	20.00	10.00	30.00	10.00	15.00	10.00	30.00	10.00	20.00
5.00	55.00	25.00	40.00	25.00	25.00	10.00	25.00	25.00	10.00
20.00	5.00	40.00	5.00	50.00	35.00	15.00	25.00	25.00	35.00
65.00	20.00	25.00	25.00	15.00	25.00	65.00	20.00	40.00	35.00
100.00	36.36	100.00	54.55	100.00	60.00	80.00	100.00	100.00	100.00
0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

UP&L-COTTONWOOD MINE
 CTW Reference Area
 Old Waste Rock Area
 Slope 1-5 deg
 Exposure: E
 Sample Date: 22-26 Aug 94

28.00	29.00	30.00	Mean	SDev	Freq	
						SHRUBS
0.00	0.00	0.00	7.90	11.32		<i>Pinus edulis</i>
35.00	0.00	0.00	2.83	9.01		<i>Cercocarpus montanus</i>
0.00	10.00	25.00	4.77	8.28		<i>Juniperus osteosperma</i>
0.00	0.00	0.00	1.00	3.27		<i>Yucca harrimanae</i>
0.00	0.00	0.00	1.83	5.84		<i>Ephedra viridis</i>

0.00	0.00	0.00	0.50	1.98	
0.00	0.00	0.00	0.50	1.23	
0.00	0.00	0.00	0.03	0.18	
0.00	0.00	0.00	0.13	0.43	
0.00	0.00	0.00	0.33	1.14	

FORBS

Opuntia polyacantha
Eriogonum bicolor
Euphorbia fendleri
Penstemon sp.
Cryptantha sp.

GRASSES

0.00	0.00	50.00	9.67	16.02	
35.00	10.00	25.00	19.83	10.61	
25.00	10.00	55.00	26.00	15.62	
10.00	5.00	10.00	21.67	13.31	
30.00	75.00	10.00	32.50	19.82	

100.00	100.00	33.33	71.45	31.77	
0.00	0.00	0.00	11.69	26.34	
0.00	0.00	0.00	0.00	0.00	

COVER

Overstory
 Understory
 Litter
 Bareground
 Rock

% COMPOSITION

Shrubs
 Forbs
 Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Road Slopes

AREA: Cottonwood Mine New Waste Rock Area (1990 Interim)

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: variable

EXPOSURE: variable

ANIMAL USE/DISTURBANCE: Slight

EROSION: Negligible

COVER: (see quant. data)

DOMINANT PLANT SPECIES OBSERVED:

Artemisia tridentata
Atriplex canescens
Ceratoides lanata

Halogeton glomeratus
Hedysarum boreale
Melilotus officinalis
Salsola pestifer

Elymus lanceolatus
Elymus cinereus
Stipa hymenoides

- NOTES: 1) In 1992 there was approximately 50% of the cover dominated by weedy plant species. Years' 1993 and 1994 about 90% of the cover was desirable species.
- 2) However, this has been a hot, dry summer and the plants seem to be suffering.
- 3) To record the quantitative data, we placed meter sq. quadrats randomly entire length of the road.

UP&L-COTTONWOOD MINE

Road Slopes

New Waste Rock Site (1990)

Slope: variable

Exposure: variable

Sample Date: 6-10 Sept 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Atriplex canescens</i>	0.00	0.00	5.00	0.00	5.00	0.00	0.00
<i>Ceratoides lanata</i>	5.00	5.00	5.00	10.00	5.00	0.00	0.00

FORBS

<i>Salsola pestifer</i>	5.00	0.00	10.00	0.00	0.00	0.00	5.00
<i>Melilotus officinalis</i>	0.00	0.00	0.00	0.00	0.00	5.00	0.00

GRASSES

<i>Stipa hymenoides</i>	0.00	0.00	0.00	10.00	5.00	10.00	5.00
<i>Elymus smithii</i>	30.00	0.00	0.00	0.00	20.00	0.00	0.00
<i>Elymus cinereus</i>	0.00	0.00	0.00	0.00	0.00	10.00	0.00
<i>Elymus lanceolatus</i>	0.00	20.00	20.00	15.00	0.00	10.00	10.00

COVER

Total Living Cover	40.00	25.00	40.00	35.00	35.00	35.00	20.00
Litter	10.00	5.00	10.00	5.00	5.00	25.00	20.00
Bareground	30.00	25.00	25.00	35.00	30.00	20.00	35.00
Rock	20.00	45.00	25.00	25.00	30.00	20.00	25.00

% COMPOSITION

Shrubs	12.50	20.00	25.00	28.57	28.57	0.00	0.00
Forbs	12.50	0.00	25.00	0.00	0.00	14.29	25.00
Grasses	75.00	80.00	50.00	71.43	71.43	85.71	75.00

UP&L-CO
Road Slo
New Was
Slope: va
Exposure:
Sample D

8.00	9.00	10.00	11.00	12.00	Mean	SDev	Freq	
0.00	0.00	0.00	15.00	0.00	2.08	4.31	8.33	SHRUBS
5.00	5.00	2.00	0.00	10.00	4.33	3.27	75.00	Atriplex c Ceratoide

0.00	0.00	13.00	10.00	0.00	3.58	4.70	41.67	FORBS
0.00	0.00	0.00	0.00	5.00	0.83	1.86	8.33	Salsola p Melilotus

0.00	0.00	0.00	0.00	0.00	2.50	3.82	33.33	GRASSE
0.00	5.00	0.00	0.00	0.00	4.58	9.46	25.00	Stipa hym
0.00	5.00	0.00	0.00	15.00	2.50	4.79	25.00	Elymus s
20.00	15.00	15.00	5.00	5.00	11.25	7.11	33.33	Elymus ci
								Elymus la

25.00	30.00	30.00	30.00	35.00	31.67	5.89		COVER
10.00	15.00	10.00	15.00	5.00	11.25	6.17		Total Livi
20.00	25.00	35.00	30.00	5.00	26.25	8.20		Litter
45.00	30.00	25.00	25.00	55.00	30.83	10.77		Baregrou
								Rock

20.00	16.67	6.67	50.00	28.57	19.71	13.51		% COMP
0.00	0.00	43.33	33.33	14.29	13.98	14.31		Shrubs
80.00	83.33	50.00	16.67	57.14	66.31	18.98		Forbs
								Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Topsoil Stockpiles

AREA: Cottonwood Mine Waste Rock Area (1990 Interim)

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: variable

EXPOSURE: variable

ANIMAL USE/DISTURBANCE: Slight

EROSION: Slight

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

Atriplex canescens

Ceratoides lanata

Halogeton glomeratus

Hedysarum boreale

Melilotus officinalis

Salsola pestifer

Elymus lanceolatus

Elymus cinereus

Stipa hymenoides

Poa secunda

Sitanion hystrix

Sporobolus airoides

- NOTES: 1) We sampled 2 piles. Both desirable and weedy species were common, the north pile was about 1:4 desirable spp. vs. weedy. The south pile had > 90% desirable spp. (the data were combined on the summary sheets).
2) North pile has a decrease in desirable spp. when compared to last year.
3) It's been a tough summer on the plants here too.
4) We placed quadrats randomly on 2 piles.
5) All areas had good representation of growth.
6) There was good species diversity.

UP&L-COTTONWOOD MINE

Topsoil Stockpiles

New Waste Rock Site (1990)

Slope: variable

Exposure: variable

Sample Date: 6-10 Sept 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

Ceratoides lanata	0.00	5.00	0.00	10.00	0.00	30.00	5.00
Atriplex canescens	0.00	0.00	5.00	0.00	0.00	0.00	0.00
Atriplex confertifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

Medicago sativa	0.00	0.00	0.00	0.00	0.00	0.00	5.00
Bassia hyssopifolia	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Salsola pestifera	25.00	30.00	30.00	0.00	0.00	0.00	0.00

GRASSES

Stipa hymenoides	0.00	0.00	0.00	10.00	5.00	0.00	0.00
Bromus tectorum	0.00	0.00	5.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	5.00	5.00	5.00	0.00	15.00	0.00	10.00
Elymus cinereus	0.00	0.00	0.00	0.00	5.00	5.00	5.00
Elymus smithii	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COVER

Total Living Cover	35.00	40.00	45.00	20.00	25.00	35.00	25.00
Litter	5.00	5.00	15.00	10.00	15.00	10.00	5.00
Bareground	35.00	30.00	20.00	45.00	25.00	10.00	20.00
Rock	25.00	25.00	20.00	25.00	35.00	45.00	50.00

% COMPOSITION

Shrubs	0.00	12.50	11.11	50.00	0.00	85.71	20.00
Forbs	85.71	75.00	66.67	0.00	0.00	0.00	20.00
Grasses	14.29	12.50	22.22	50.00	100.00	14.29	60.00

UP&L-COTTONWOOD MINE
 Topsoil Stockpiles
 New Waste Rock Site (1990)
 Slope: variable
 Exposure: variable
 Sample Date: 6-10 Sept 94

8.00	9.00	10.00	Mean	SDev	Freq	
10.00	5.00	5.00	7.00	8.43	70.00	SHRUBS
0.00	0.00	0.00	0.50	1.50	10.00	<i>Ceratoides lanata</i>
0.00	25.00	0.00	2.50	7.50	10.00	<i>Atriplex canescens</i>
						<i>Atriplex confertifolia</i>
5.00	0.00	5.00	1.50	2.29	30.00	FORBS
0.00	0.00	0.00	0.50	1.50	10.00	<i>Medicago sativa</i>
0.00	0.00	0.00	8.50	13.05	30.00	<i>Bassia hyssopifolia</i>
						<i>Salsola pestifera</i>
0.00	0.00	0.00	1.50	3.20	20.00	GRASSES
0.00	0.00	0.00	0.50	1.50	10.00	<i>Stipa hymenoides</i>
20.00	10.00	20.00	9.00	7.00	80.00	<i>Bromus tectorum</i>
0.00	0.00	5.00	2.00	2.45	40.00	<i>Elymus lanceolatus</i>
10.00	0.00	0.00	1.00	3.00	10.00	<i>Elymus cinereus</i>
						<i>Elymus smithii</i>
45.00	40.00	35.00	34.50	8.20		COVER
15.00	10.00	10.00	10.00	3.87		Total Living Cover
25.00	25.00	20.00	25.50	9.07		Litter
15.00	25.00	35.00	30.00	10.49		Bareground
						Rock
22.22	75.00	14.29	29.08	28.97		% COMPOSITION
11.11	0.00	14.29	27.28	32.72		Shrubs
66.67	25.00	71.43	43.64	28.79		Forbs
						Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Subsoil Piles

AREA: Cottonwood Mine New Waste Rock Area (1990 Interim)

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: variable

EXPOSURE: variable

ANIMAL USE/DISTURBANCE: Slight

EROSION: slight

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

Artemisia tridentata

Atriplex canescens

Ceratoides lanata

Halogeton glomeratus

Hedysarum boreale

Melilotus officinalis

Salsola pestifer

Elymus lanceolatus

Elymus cinereus

Stipa hymenoides

Sitanion hystrrix

- NOTES: 1) The top of the pile had more desirable spp. growth in areas where water had collected.
- 2) As last year, more growth continues to occur in gouges.
- 3) Unmulched areas were dominated by weeds.
- 4) Areas that were mulched had many more desirable spp. and a minimum of erosion.
- 5) The areas with erosion control mat has the best representation of shrub growth.
- 6) We sampled randomly on all piles combining the data for summaries.
- 8) The site seems to have suffered from these hot and dry summer conditions.
- 9) Possible decrease in spp. diversity from 1993.

UP&L-COTTONWOOD MINE

Subsoil Piles

New Waste Rock Site (1990)

Slope: variable

Exposure: variable

Sample Date: 6-10 Sept 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Atriplex canescens</i>	0.00	0.00	0.00	0.00	0.00	15.00	5.00
<i>Ceratoides lanata</i>	0.00	5.00	10.00	5.00	20.00	10.00	20.00
<i>Eriogonum corymbosum</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00

FORBS

<i>Salsola pestifer</i>	0.00	5.00	10.00	20.00	5.00	0.00	0.00
<i>Melilotus officinalis</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

<i>Stipa hymenoides</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus lanceolatus</i>	0.00	0.00	0.00	0.00	5.00	10.00	5.00
<i>Elymus smithii</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00
<i>Elymus cinereus</i>	20.00	0.00	0.00	0.00	0.00	0.00	0.00

COVER

Total Living Cover	20.00	15.00	25.00	25.00	30.00	35.00	30.00
Litter	4.00	10.00	20.00	10.00	5.00	5.00	5.00
Bareground	75.00	65.00	50.00	60.00	60.00	55.00	60.00
Rock	1.00	10.00	5.00	5.00	5.00	5.00	5.00

% COMPOSITION

Shrubs	0.00	66.67	40.00	20.00	66.67	71.43	83.33
Forbs	0.00	33.33	40.00	80.00	16.67	0.00	0.00
Grasses	100.00	0.00	20.00	0.00	16.67	28.57	16.67

UP&L-COTTONWOOD MINE
 Subsoil Piles
 New Waste Rock Site (1990)
 Slope: variable
 Exposure: variable
 Sample Date: 6-10 Sept 94

8.00	9.00	10.00	Mean	SDev	Freq	
						SHRUBS
0.00	0.00	0.00	2.00	4.58	20.00	<i>Atriplex canescens</i>
30.00	15.00	10.00	12.50	8.44	90.00	<i>Ceratoides lanata</i>
0.00	0.00	0.00	0.50	1.50	10.00	<i>Eriogonum corymbosum</i>
						FORBS
0.00	0.00	0.00	4.00	6.24	40.00	<i>Salsola pestifer</i>
0.00	0.00	10.00	1.00	3.00	10.00	<i>Melilotus officinalis</i>
						GRASSES
0.00	5.00	0.00	0.50	1.50	10.00	<i>Stipa hymenoides</i>
10.00	10.00	0.00	4.00	4.36	50.00	<i>Elymus lanceolatus</i>
0.00	0.00	0.00	0.50	1.50	10.00	<i>Elymus smithii</i>
0.00	0.00	0.00	2.00	6.00	10.00	<i>Elymus cinereus</i>
						COVER
40.00	30.00	20.00	27.00	7.14		Total Living Cover
5.00	25.00	25.00	11.40	8.16		Litter
50.00	40.00	50.00	56.50	9.23		Bareground
5.00	5.00	5.00	5.10	2.02		Rock
						% COMPOSITION
75.00	50.00	50.00	52.31	24.89		Shrubs
0.00	0.00	50.00	22.00	26.55		Forbs
25.00	50.00	0.00	25.69	28.80		Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Sediment Pond Banks

AREA: Cottonwood Mine New Waste Rock Area (1990 Interim)

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: variable

EXPOSURE: variable

ANIMAL USE/DISTURBANCE: Slight

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

Artemisia tridentata

Atriplex canescens

Ceratoides lanata

Halogeton glomeratus

Hedysarum boreale

Melilotus officinalis

Salsola pestifer

Elymus lanceolatus

Elymus cinereus

Stipa hymenoides

Sitanion hystrix

Sporobolus airoides

- NOTES:
- 1) This year and in 1993, the cover was represented by < 25% weeds (the cover was < 50% weeds in 1992).
 - 2) Site looked good, but dry.

UP&L-COTTONWOOD MINE

Sediment Pond Banks

New Waste Rock Site (1990)

Slope: variable

Exposure: variable

Sample Date: 6-10 Sept 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Atriplex confertifolia</i>	0.00	0.00	0.00	0.00	0.00	0.00	20.00
<i>Atriplex canescens</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Ceratoides lanata</i>	15.00	10.00	25.00	25.00	25.00	30.00	0.00

FORBS**GRASSES**

<i>Stipa hymenoides</i>	5.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus lanceolatus</i>	0.00	15.00	15.00	10.00	10.00	10.00	15.00
<i>Elymus cinereus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COVER

Total Living Cover	20.00	25.00	40.00	35.00	35.00	40.00	35.00
Litter	5.00	10.00	25.00	10.00	5.00	10.00	10.00
Bareground	50.00	40.00	25.00	30.00	35.00	25.00	30.00
Rock	25.00	25.00	10.00	25.00	25.00	25.00	25.00

% COMPOSITION

Shrubs	75.00	40.00	62.50	71.43	71.43	75.00	57.14
Forbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	25.00	60.00	37.50	28.57	28.57	25.00	42.86

UP&L-COTTONWOOD MINE
 Sediment Pond Banks
 New Waste Rock Site (1990)
 Slope: variable
 Exposure: variable
 Sample Date: 6-10 Sept 94

8.00	9.00	10.00	Mean	SDev	Freq	
0.00	0.00	10.00	3.00	6.40	20.00	SHRUBS
25.00	5.00	5.00	3.50	7.43	30.00	<i>Atriplex confertifolia</i>
0.00	20.00	0.00	15.00	11.18	70.00	<i>Atriplex canescens</i>
						<i>Ceratoides lanata</i>

FORBS

0.00	0.00	0.00	0.50	1.50	10.00	GRASSES
10.00	5.00	20.00	11.00	5.39	90.00	<i>Stipa hymenoides</i>
5.00	0.00	5.00	1.00	2.00	20.00	<i>Elymus lanceolatus</i>
						<i>Elymus cinereus</i>

40.00	30.00	40.00	34.00	6.63	COVER
5.00	5.00	5.00	9.00	5.83	Total Living Cover
30.00	25.00	20.00	31.00	8.31	Litter
25.00	40.00	35.00	26.00	7.35	Bareground
					Rock
<hr/>					
62.50	83.33	37.50	63.58	14.33	% COMPOSITION
0.00	0.00	0.00	0.00	0.00	Shrubs
37.50	16.67	62.50	36.42	14.33	Forbs
					Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Refuse Berm '91 (Final) - Waste Rock Site

AREA: Cottonwood Mine

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 28 deg.

EXPOSURE: S

ANIMAL USE/DISTURBANCE: Grazed by cattle

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see quantitative data)

WOODY SPECIES DENSITY:

No./Acre

<u>Ceratoides lanata</u>	38187.60
<u>Atriplex canescens</u>	<u>435.60</u>
Total	<u>38623.20</u>

- NOTES: 1) Most of the litter on the data was erosion control mat.
2) Sampled by placing a 200' transect line down and placing a quadrat every 20'.
3) Woody spp. density was done by 3'X10' belt method.
4) There was a good representation of grasses and shrubs (mostly winterfat), but few forbs.
5) Interestingly, most of the winterfat has not seeded out. Could this be because it's been a dry year which has caused most of the plants to be male?

UP&L-COTTONWOOD MINE

Refuse Berm 1991 (Final)

Waste Rock Site (1991)

Slope: 28 deg

Exposure: S

Sample Date: 6-10 Sept 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Atriplex confertifolia</i>	0.00	0.00	0.00	0.00	0.00	5.00	5.00
<i>Ceratoides lanata</i>	20.00	15.00	20.00	15.00	20.00	15.00	20.00

FORBS**GRASSES**

<i>Elymus smithii</i>	0.00	0.00	0.00	0.00	0.00	0.00	5.00
<i>Elymus lanceolatus</i>	20.00	10.00	5.00	5.00	0.00	5.00	0.00

COVER

Total Living Cover	40.00	25.00	25.00	20.00	20.00	25.00	30.00
Litter	30.00	25.00	25.00	25.00	25.00	25.00	25.00
Bareground	15.00	45.00	40.00	50.00	50.00	35.00	40.00
Rock	15.00	5.00	10.00	5.00	5.00	15.00	5.00

% COMPOSITION

Shrubs	50.00	60.00	80.00	75.00	100.00	80.00	83.33
Forbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	50.00	40.00	20.00	25.00	0.00	20.00	16.67

UP&L-COTTONWOOD MINE
Refuse Berm 1991 (Final)
Waste Rock Site (1991)
Slope: 28 deg
Exposure: S
Sample Date: 6-10 Sept 94

8.00	9.00	10.00	Mean	SDev	Freq	
0.00	0.00	0.00	1.00	2.00	20.00	SHRUBS
10.00	25.00	25.00	18.50	4.50	100.00	<i>Atriplex confertifolia</i> <i>Ceratoides lanata</i>

FORBS

						GRASSES
0.00	0.00	0.00	0.50	1.50	10.00	<i>Elymus smithii</i>
10.00	10.00	5.00	7.00	5.57	80.00	<i>Elymus lanceolatus</i>

					COVER
20.00	35.00	30.00	27.00	6.40	Total Living Cover
25.00	30.00	35.00	27.00	3.32	Litter
35.00	15.00	25.00	35.00	12.25	Bareground
20.00	20.00	10.00	11.00	5.83	Rock
					% COMPOSITION
50.00	71.43	83.33	73.31	15.08	Shrubs
0.00	0.00	0.00	0.00	0.00	Forbs
50.00	28.57	16.67	26.69	15.08	Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Ninth East Road Breakout

AREA: Cottonwood Mine (1988 Reveg. Area)

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: variable

EXPOSURE: variable

ANIMAL USE/DISTURBANCE: slight

EROSION: Erosion mat was still in place, but there was some slight erosion.

COVER: (see quantitative data).

DOMINANT PLANT SPECIES OBSERVED:

Chrysanthemus nauseosus

Aster chilensis

Melilotus officinalis

Elymus lanceolatus

Stipa hymenoides

Agropyron cristatum

Elymus hispidus

NOTES: 1) We sampled regularly up road.

UP&L-COTTONWOOD MINE

Ninth East Breakout

1988 Reveg Area

Slope: variable

Exposure: variable

Sample Date: 6-10 Sept 94

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
--	------	------	------	------	------	------	------

SHRUBS

Eriogonum corymbosum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
----------------------	------	------	------	------	------	------	------

FORBS

Aster chilensis	0.00	15.00	5.00	0.00	10.00	35.00	25.00
Medicago sativa	5.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

Agropyron cristatum	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Elymus smithii	0.00	0.00	0.00	0.00	15.00	0.00	0.00
Elymus spicatus	5.00	0.00	30.00	25.00	0.00	0.00	0.00
Elymus hispidus	10.00	20.00	0.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	0.00	0.00	0.00	10.00	0.00	0.00	0.00

COVER

Total Living Cover	30.00	35.00	35.00	35.00	25.00	45.00	35.00
Litter	50.00	40.00	30.00	30.00	10.00	5.00	20.00
Bareground	10.00	10.00	25.00	25.00	5.00	5.00	40.00
Rock	10.00	15.00	10.00	10.00	60.00	45.00	5.00

% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	16.67	42.86	14.29	0.00	40.00	77.78	71.43
Grasses	83.33	57.14	85.71	100.00	60.00	22.22	28.57

UP&L-COTTONWOOD MINE
 Ninth East Breakout
 1988 Reveg Area
 Slope: variable
 Exposure: variable
 Sample Date: 6-10 Sept 94

8.00	9.00	10.00	Mean	SDev	Freq	
0.00	0.00	15.00	1.50	4.50	10.00	SHRUBS <i>Eriogonum corymbosum</i>
25.00	20.00	20.00	15.50	11.06	80.00	FORBS <i>Aster chilensis</i>
0.00	0.00	0.00	0.50	1.50	10.00	<i>Medicago sativa</i>
						GRASSES
5.00	0.00	0.00	1.50	3.20	20.00	<i>Agropyron cristatum</i>
0.00	30.00	0.00	4.50	9.60	20.00	<i>Elymus smithii</i>
0.00	0.00	0.00	8.00	7.48	30.00	<i>Elymus spicatus</i>
0.00	0.00	0.00	3.00	6.40	20.00	<i>Elymus hispidus</i>
10.00	0.00	10.00	3.00	4.58	30.00	<i>Elymus lanceolatus</i>
						COVER
40.00	50.00	45.00	37.50	7.16		Total Living Cover
5.00	25.00	30.00	24.50	14.04		Litter
5.00	15.00	15.00	15.50	10.83		Bareground
50.00	10.00	10.00	22.50	19.53		Rock
						% COMPOSITION
0.00	0.00	33.33	3.33	10.00		Shrubs
62.50	40.00	44.44	41.00	23.97		Forbs
37.50	60.00	22.22	55.67	26.41		Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Test Plots

AREA: Cottonwood Mine

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 35 deg.

EXPOSURE: E (S)

ANIMAL USE/DISTURBANCE: Negligible (fenced)

EROSION: slight

COVER: The upper plots (T1 - T4) seemed to have more weedy spp. this year in the upper 1/2 of the plot. This could be over-spill from road salt above it. Otherwise, the plot looked about the same as last year.

NOTES: 1) See reference drawing below.

ROAD

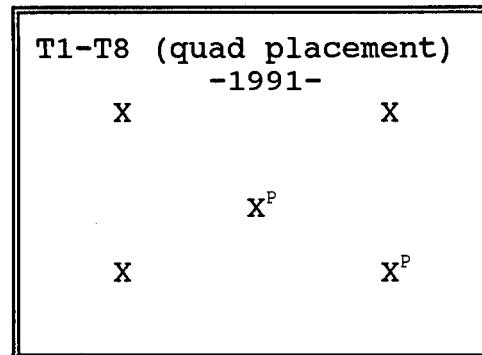
T1* Hydro Mulch	T2* Mulch Blanket	T3* Hay & Netting	T4* No Mulch
T5** Hydro Mulch	T6** Mulch Blanket	T7** Hay & Netting	T8** No Mulch

* Non-irrigated plots

** Irrigated plots

*** Plots are 20' x 20' with 5' between

SITE NAME: Test Plots (continued)



^P Production sample locations

PLANT SPECIES PLANTED

Amalanchier alnifolia
Atriplex canescens
Chrysothamnus nauseosus
Ephedra viridis
Picea pungens
Pseudotsuga menziesii

Aster glaucodes
Linum lewisi
Melilotus officinalis
Sphaeralcea coccinea

Agropyron dasystachum
Agropyron intermedium
Elymus smithii
Elymus spicatus
Orzopsis hymenoides
Stipa comata

PLANT SPECIES OBSERVED

Chrysothamnus nauseosus
Eriogonum corymbosum

Aster glaucodes
Eriogonum sp.
Halogeton glomeratus
Kochia scoparia
Melilotus officinalis
Penstemon palmeri
Salsola pestifer

Elymus spicatus
Elymus lanceolatus

METHODS: Cover: Qualitative methods.

COLOR PHOTOGRAPHS OF THE REVEGETATION MONITORING SITES FOR PACIFICORP (AUG - SEPT 1994)



Cottonwood Mine - Old Fan Road (1 of 2)



Cottonwood Mine - Old Fan Road (2 of 2)



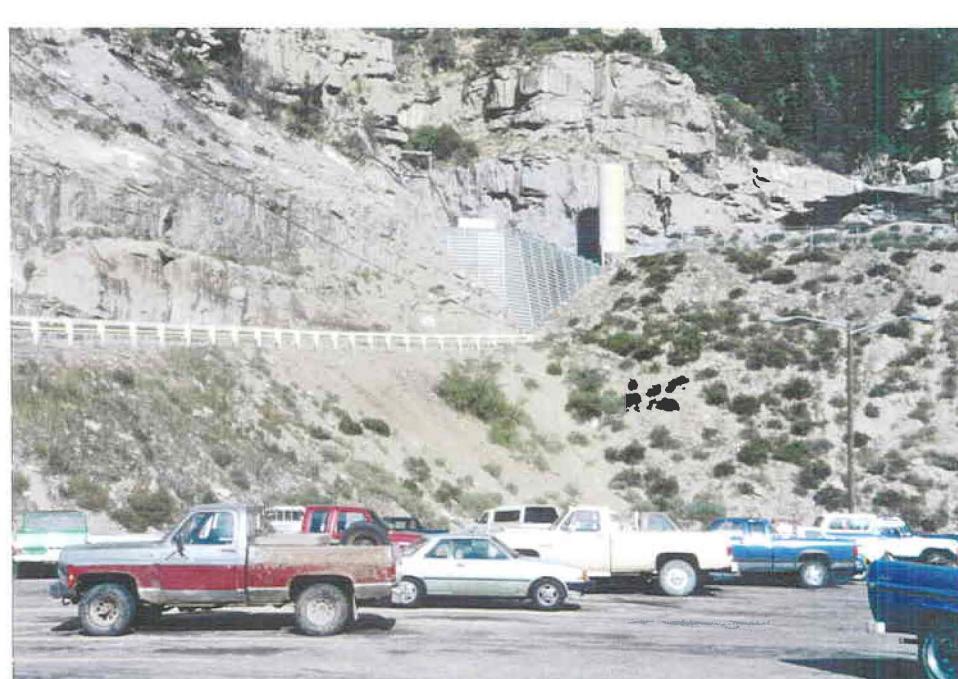
Cottonwood Mine - Reference Area (1 of 2)



Cottonwood Mine - Reference Area (2 of 2)



Cottonwood Mine - 4th East Road



Cottonwood Mine - Storage Yard Slope



Cottonwood Mine - Parking Lot Slope



Cottonwood Mine - Road/Silo Pad Slope

COLOR PHOTOGRAPHS OF THE REVEGETATION MONITORING SITES FOR PACIFICORP (AUG - SEPT 1994)



Cottonwood Mine - Tipple Area Slopes



Cottonwood Mine - Sediment Pond Banks



Cottonwood Mine - Old Waste Rock - Cell #1



Cottonwood Mine - Old Waste Rock - Cell #2



Cottonwood Mine - Old Waste Rock - Cell #2
Problem Area "F"



Cottonwood Mine - Old Waste Rock - Cell #2
Problem Area "G"



Cottonwood Mine - Old Waste Rock - Cell #2
Problem Area "H"



Cottonwood Mine - Old Waste Rock - Cell #3

COLOR PHOTOGRAPHS OF THE REVEGETATION MONITORING SITES FOR PACIFICORP (AUG - SEPT 1994)



Cottonwood Mine - Old Waste Rock - Cell #4



Cottonwood Mine - Old Waste Rock - Berm #1



Cottonwood Mine - Old Waste Rock - Berm #2



Cottonwood Mine - Old Waste Rock - Berm #3



Cottonwood Mine - Old Waste Rock - Berm #4



Cottonwood Mine - CTW Reference Area



Cottonwood Mine - New Waste Rock - Road Slopes



Cottonwood Mine - New Waste Rock - Topsoil Stockpile
(1 of 2)

COLOR PHOTOGRAPHS OF THE REVEGETATION MONITORING SITES FOR PACIFICORP (AUG - SEPT 1994)



Cottonwood Mine - New Waste Rock - Topsoil Stockpile
(2 of 2)



Cottonwood Mine - New Waste Rock - Subsoil Stockpile



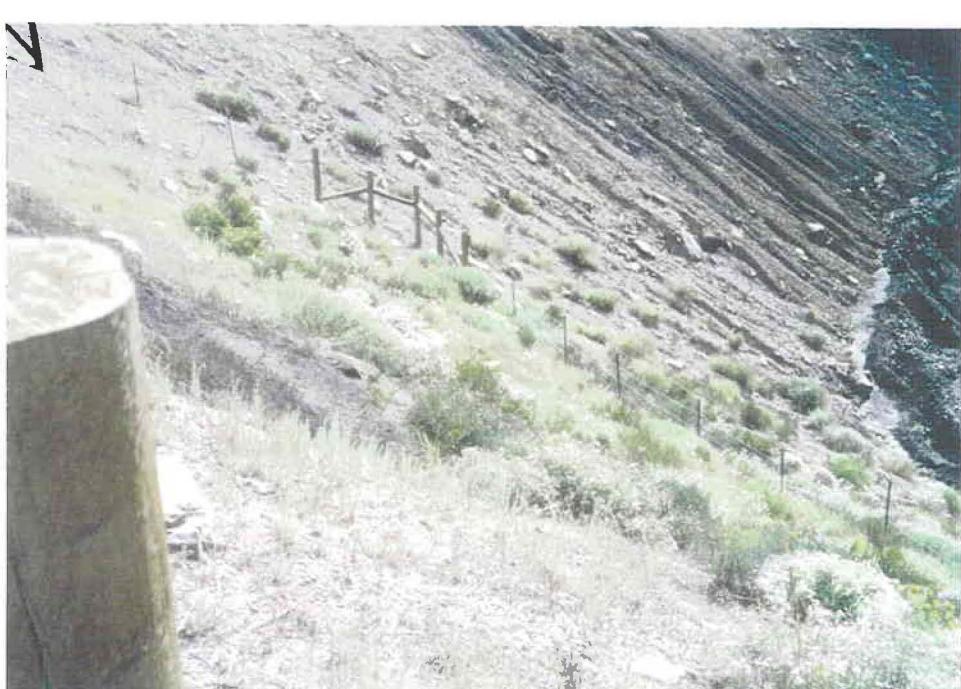
Cottonwood Mine - New Waste Rock - Sediment Pond Banks



Cottonwood Mine - Refuse Berm



Cottonwood Mine - Ninth East Breakout



Cottonwood Mine - Test Plots

PULL

DES-BEE-DOVE AREA

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Beehive Yard Slope

AREA: Des-Bee-Dove (1988 Reveg. Area)

DATE: August 19-21, 1994

WORKERS: P. Collins, K. Collins

SLOPE: 20-50 deg.

EXPOSURE: SE

AREA: 1.6 acres

ANIMAL USE/DISTURBANCE: None observed

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

Atriplex confertifolia

Ceratoides lanata

Chrysothamnus nauseosus

Eriogonum corymbosum

Halogeton glomeratus

Penstemon palmeri

Agrpyron cristatum

Elymus lanceolatus

Elymus smithii

Elymus spicatus

Elymus cinereus

Stipa hymenoides

NOTES:

- 1) Methods: As in 1993, because the slope was steep, wet and slippery, we estimated the quadrats from a distances.
- 2) Good density of woody species presently established.
- 3) The chain link fence covering the ground is still holding earth well.

UP&L-DES BEE DOVE

Beehive Yard Slope

1988 Reveg Area

Acreage: 1.6 acre

Slope: 20 - 50 deg

Exposure: SE

Sample Date: 19-21 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Chrysothamnus nauseosus</i>	30.00	0.00	0.00	30.00	15.00	10.00	15.00
<i>Atriplex confertifolia</i>	10.00	20.00	5.00	0.00	20.00	15.00	15.00
<i>Eriogonum corymbosum</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

<i>Penstemon palmeri</i>	0.00	10.00	5.00	10.00	0.00	0.00	0.00
--------------------------	------	-------	------	-------	------	------	------

GRASSES

<i>Elymus spicatus</i>	0.00	0.00	15.00	10.00	0.00	0.00	0.00
<i>Elymus lanceolatus</i>	0.00	0.00	0.00	0.00	15.00	0.00	0.00
<i>Agropyron cristatum</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus salinus</i>	0.00	10.00	0.00	0.00	0.00	0.00	0.00

COVER

Total Living Cover	40.00	40.00	25.00	50.00	50.00	25.00	30.00
Litter	5.00	5.00	5.00	10.00	10.00	5.00	5.00
Bareground	40.00	15.00	10.00	15.00	15.00	10.00	25.00
Rock	15.00	40.00	60.00	25.00	25.00	60.00	40.00

% COMPOSITION

Shrubs	100.00	50.00	20.00	60.00	70.00	100.00	100.00
Forbs	0.00	25.00	20.00	20.00	0.00	0.00	0.00
Grasses	0.00	25.00	60.00	20.00	30.00	0.00	0.00

UP&L-DES BEE DOVE
 Beehive Yard Slope
 1988 Reveg Area
 Acreage: 1.6 acre
 Slope: 20 - 50 deg
 Exposure: SE

8.00	9.00	10.00	Mean	SDev	Freq	Sample Date: 19-21 Aug 94
------	------	-------	------	------	------	---------------------------

30.00	15.00	0.00	14.50	11.72	70.00	SHRUBS
0.00	0.00	10.00	9.50	7.57	70.00	<i>Chrysothamnus nauseosus</i>
0.00	0.00	25.00	2.50	7.50	10.00	<i>Atriplex confertifolia</i>
						<i>Eriogonum corymbosum</i>

0.00	15.00	0.00	4.00	5.39	40.00	FORBS
						<i>Penstemon palmeri</i>

5.00	0.00	0.00	3.00	5.10	30.00	GRASSES
0.00	10.00	0.00	2.50	5.12	20.00	<i>Elymus spicatus</i>
5.00	0.00	0.00	0.50	1.50	10.00	<i>Elymus lanceolatus</i>
0.00	0.00	0.00	1.00	3.00	10.00	<i>Agropyron cristatum</i>
						<i>Elymus salinus</i>

40.00	40.00	35.00	37.50	8.44	COVER
5.00	5.00	5.00	6.00	2.00	Total Living Cover
20.00	15.00	20.00	18.50	8.38	Litter
35.00	40.00	40.00	38.00	13.64	Bareground
					Rock

75.00	37.50	100.00	71.25	27.69	% COMPOSITION
0.00	37.50	0.00	10.25	13.34	Shrubs
25.00	25.00	0.00	18.50	18.31	Forbs
					Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Beehive Road Berm

AREA: Des-Bee-Dove (1988 Reveg. Area)

DATE: August 19-21, 1994

WORKERS: P. Collins, K. Collins

SLOPE: 30°

EXPOSURE: variable

ANIMAL USE/DISTURBANCE: Minimal

EROSION: Negligible, but has been controlled by rocks and gravel.

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see quantitative data)

Atriplex confertifolia

Chrysothamnus nauseosus

Eriogonum corymbosum

Halogeton glomeratus

Penstemon palmeri

Elymus lanceolatus

Elymus salinus

Sitanion hystrix

NOTES:

- 1) For quant. data, we sampled at regular intervals along berm.
- 2) There was a good representation of weedy species, but less of desirable species.

UP&L-DES BEE DOVE

Beehive Road Berm

1988 Reveg Area

Slope: 30 deg

Exposure: variable

Sample Date: 19-21 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Atriplex confertifolia</i>	10.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Chysothamnus nauseosus</i>	10.00	0.00	5.00	0.00	0.00	10.00	25.00

FORBS

<i>Halogeton glomeratus</i>	0.00	0.00	5.00	5.00	20.00	0.00	0.00
-----------------------------	------	------	------	------	-------	------	------

GRASSES

<i>Stipa hymenoides</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus lanceolatus</i>	5.00	0.00	0.00	0.00	0.00	15.00	0.00

COVER

Total Living Cover	25.00	5.00	10.00	5.00	20.00	25.00	25.00
Litter	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Bareground	10.00	80.00	20.00	65.00	20.00	25.00	10.00
Rock	60.00	10.00	65.00	25.00	55.00	45.00	60.00

% COMPOSITION

Shrubs	80.00	0.00	50.00	0.00	0.00	40.00	100.00
Forbs	0.00	0.00	50.00	100.00	100.00	0.00	0.00
Grasses	20.00	100.00	0.00	0.00	0.00	60.00	0.00

UP&L-DES BEE DOVE
 Beehive Road Berm
 1988 Reveg Area
 Slope: 30 deg
 Exposure: variable
 Sample Date: 19-21 Aug 94

	Mean	SDev	Freq	
				SHRUBS
0.00	1.25	3.31	12.50	<i>Atriplex confertifolia</i>
0.00	6.25	8.20	50.00	<i>Chysothamnus nauseosus</i>

0.00	3.75	6.50	37.50	FORBS
				<i>Halogeton glomeratus</i>

5.00	1.25	2.17	25.00	GRASSES
0.00	2.50	5.00	25.00	<i>Stipa hymenoides</i>
				<i>Elymus lanceolatus</i>

				COVER
5.00	15.00	9.01		Total Living Cover
5.00	5.00	0.00		Litter
20.00	31.25	24.59		Bareground
70.00	48.75	19.65		Rock
				% COMPOSITION
0.00	33.75	37.73		Shrubs
0.00	31.25	42.85		Forbs
100.00	35.00	42.13		Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Deseret Road Berm

AREA: Des-Bee-Dove (1988 Reveg. Area)

DATE: August 19-21, 1994

WORKERS: P. Collins, K. Collins

SLOPE: 6-10 deg.

EXPOSURE: E

AREA: .2 acre

ANIMAL USE/DISTURBANCE: None observed

EROSION: Negligible, but controlled by rock and gravel.

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

Atriplex confertifolia
Chrysothamnus nauseosus

Halogeton glomeratus
Kochia scoparia

Stipa hymenoides

- NOTES:
- 1) The site seemed to be more weedy, but there was not much change from last year.
 - 2) Methods: For cover we placed meter sq. quadrats at regular intervals along inside, top and outside of berm (nearest road).
 - 3) As last year, most of the herbaceous spp. were weedy exotic species.

UP&L-DES BEE DOVE

Desert Road Berm

1988 Reveg Area

Acreage: .2 acre

Slope: 6-10 deg

Exposure: E

Sample Date: 19-21 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Atriplex confertifolia</i>	0.00	0.00	0.00	0.00	0.00	0.00	5.00
<i>Chrysothamnus nauseosus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

<i>Halogetum glomeratus</i>	0.00	5.00	20.00	10.00	5.00	15.00	15.00
<i>Kochia scoparia</i>	5.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Bassia hyssopifolia</i>	0.00	0.00	0.00	30.00	0.00	0.00	0.00

GRASSES

<i>Elymus lanceolatus</i>	10.00	0.00	0.00	0.00	30.00	0.00	0.00
<i>Elymus cinereus</i>	5.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Stipa hymenoides</i>	0.00	0.00	0.00	0.00	0.00	15.00	0.00

COVER

Total Living Cover	20.00	5.00	20.00	40.00	35.00	30.00	20.00
Litter	10.00	5.00	5.00	5.00	10.00	15.00	5.00
Bareground	45.00	15.00	5.00	25.00	15.00	10.00	15.00
Rock	25.00	75.00	70.00	30.00	40.00	45.00	60.00

% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	25.00
Forbs	25.00	100.00	100.00	100.00	14.29	50.00	75.00
Grasses	75.00	0.00	0.00	0.00	85.71	50.00	0.00

UP&L-DES BEE DOVE
 Desert Road Berm
 1988 Reveg Area
 Acreage: .2 acre
 Slope: 6-10 deg
 Exposure: E
 Sample Date: 19-21 Aug 94

8.00	9.00	10.00	Mean	SDev	Freq	
0.00	0.00	0.00	0.50	1.50	10.00	SHRUBS
0.00	0.00	10.00	1.00	3.00	10.00	<i>Atriplex confertifolia</i> <i>Chrysothamnus nauseosus</i>

15.00	25.00	15.00	12.50	7.16	90.00	FORBS
0.00	0.00	0.00	0.50	1.50	10.00	<i>Halogetum glomeratus</i>
0.00	0.00	0.00	3.00	9.00	10.00	<i>Kochia scoparia</i> <i>Bassia hyssopifolia</i>

0.00	0.00	0.00	4.00	9.17	20.00	GRASSES
0.00	0.00	0.00	0.50	1.50	10.00	<i>Elymus lanceolatus</i>
0.00	0.00	0.00	1.50	4.50	10.00	<i>Elymus cinereus</i> <i>Stipa hymenoides</i>

15.00	25.00	25.00	23.50	9.50	COVER
15.00	5.00	5.00	8.00	4.00	Total Living Cover
20.00	20.00	45.00	21.50	12.85	Litter
50.00	50.00	25.00	47.00	16.76	Bareground
					Rock

0.00	0.00	40.00	6.50	13.43	% COMPOSITION
100.00	100.00	60.00	72.43	31.77	Shrubs
0.00	0.00	0.00	21.07	33.21	Forbs
					Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Portal Road Berm

AREA: Des-Bee-Dove (1988 Reveg. Area)

DATE: August 19-21, 1994

WORKERS: P. Collins, K. Collins

SLOPE: 30 deg.

EXPOSURE: SW

AREA: .1 acre

ANIMAL USE/DISTURBANCE: Cattle on road was again evident

EROSION: Erosion has been controlled by rocks and gravel.

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

Chrysothamnus nauseosus

Halogeton glomeratus

Elymus salinus

Stipa hymenoides

- NOTES: 1) Methods: For cover we placed meter sq. quadrats at regular intervals.
2) I took samples on inside, top, then on the outside of the berm.
3) The inside of the berm had been scraped for road maintenance. That's why it's so sparse and weedy.
4) Because of maintenance procedures, there were weeds inside the berm and desirable spp. on the top and outside.

UP&L-DES BEE DOVE

Portal Road Berm

1988 Reveg Area

Acreage: .1 acre

Slope: 30 deg

Exposure: SW

Sample Date: 19-21 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Atriplex confertifolia</i>	0.00	0.00	10.00	0.00	0.00	20.00	0.00
<i>Atriplex gardneri</i>	5.00	3.00	0.00	0.00	0.00	0.00	0.00

FORBS

<i>Halogeton glomeratus</i>	10.00	2.00	5.00	0.00	5.00	0.00	0.00
-----------------------------	-------	------	------	------	------	------	------

GRASSES

<i>Stipa hymenoides</i>	0.00	5.00	0.00	5.00	0.00	15.00	15.00
-------------------------	------	------	------	------	------	-------	-------

COVER

Total Living Cover	15.00	10.00	15.00	5.00	5.00	35.00	15.00
Litter	5.00	1.00	1.00	1.00	1.00	5.00	5.00
Bareground	20.00	24.00	19.00	4.00	14.00	5.00	10.00
Rock	60.00	65.00	65.00	90.00	80.00	55.00	70.00

% COMPOSITION

Shrubs	33.33	30.00	66.67	0.00	0.00	57.14	0.00
Forbs	66.67	20.00	33.33	0.00	100.00	0.00	0.00
Grasses	0.00	50.00	0.00	100.00	0.00	42.86	100.00

UP&L-DES BEE DOVE

Portal Road Berm

1988 Reveg Area

Acreage: .1 acre

Slope: 30 deg

Exposure: SW

Sample Date: 19-21 Aug 94

Mean SDev Freq

SHRUBS

4.29	7.28	28.57	Atriplex confertifolia
1.14	1.88	28.57	Atriplex gardneri

3.14 3.48 57.14

FORBS

Halogeton glomeratus

5.71 6.23 57.14

GRASSES

Stipa hymenoides

COVER

14.29	9.42	Total Living Cover
2.71	1.98	Litter
13.71	7.15	Bareground
69.29	11.16	Rock

% COMPOSITION

26.73	25.96	Shrubs
31.43	35.94	Forbs
41.84	41.55	Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Bathhouse Road Berm

AREA: Des-Bee-Dove (1988 Interim Reveg. Area)

DATE: August 19-21, 1994

WORKERS: P. Collins, K. Collins

SLOPE: 30 deg.

EXPOSURE: SW

AREA: .1 acre

ANIMAL USE/DISTURBANCE: Slight

EROSION: Negligible, but erosion has been repaired with gravel.

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

Chrysothamnus nauseosus

Halogeton glomeratus

Kochia scoparia

Elymus smithii

Elymus lanceolatus

Stipa hymenoides

Sitanion hystrix

NOTES: 1) Veg. cover was still quite weedy, but has a lot of rubber rabbitbrush this year

2) Methods: For cover we placed meter sq. quadrats at regular intervals over the entire length of the road berm.

UP&L-DES BEE DOVE

Bathhouse Road Berm

1988 Interim Reveg

Acreage: .1 acre

Slope: 30 deg

Exposure: SW

Sample Date: 19-21 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Chrysothamnus nauseosus</i>	10.00	15.00	5.00	0.00	15.00	20.00	20.00
--------------------------------	-------	-------	------	------	-------	-------	-------

FORBS

<i>Halogeton glomeratus</i>	0.00	0.00	0.00	0.00	0.00	0.00	5.00
-----------------------------	------	------	------	------	------	------	------

GRASSES

<i>Stipa hymenoides</i>	5.00	5.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus lanceolatus</i>	0.00	0.00	10.00	15.00	0.00	5.00	0.00
<i>Elymus cinereus</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00

COVER

Total Living Cover	15.00	20.00	20.00	15.00	15.00	25.00	25.00
Litter	5.00	5.00	5.00	2.00	2.00	5.00	5.00
Bareground	20.00	25.00	20.00	13.00	70.00	5.00	20.00
Rock	60.00	50.00	55.00	70.00	13.00	65.00	50.00

% COMPOSITION

Shrubs	66.67	75.00	25.00	0.00	100.00	80.00	80.00
Forbs	0.00	0.00	0.00	0.00	0.00	0.00	20.00
Grasses	33.33	25.00	75.00	100.00	0.00	20.00	0.00

UP&L-DES BEE DOVE
 Bathhouse Road Berm
 1988 Interim Reveg
 Acreage: .1 acre
 Slope: 30 deg
 Exposure: SW
 Sample Date: 19-21 Aug 94

Mean	SDev	Freq	
12.14	7.00	95.71	SHRUBS <i>Chrysothamnus nauseosus</i>

0.71	1.75	14.29	FORBS <i>Halogeton glomeratus</i>
------	------	-------	---

1.43	2.26	28.57	GRASSES
4.29	5.62	42.86	<i>Stipa hymenoides</i>
0.71	1.75	14.29	<i>Elymus lanceolatus</i>
			<i>Elymus cinereus</i>

19.29	4.16	COVER
4.14	1.36	Total Living Cover
24.71	19.43	Litter
51.86	17.30	Bareground
		Rock

60.95	32.71	% COMPOSITION
2.86	7.00	Shrubs
36.19	35.04	Forbs
		Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Tipple Slope

AREA: Des-Bee-Dove (1988 Reveg. Area)

DATE: August 19-21, 1994

WORKERS: P. Collins, K. Collins

SLOPE: 40-45 deg.

EXPOSURE: variable

AREA: .4 acre

ANIMAL USE/DISTURBANCE: None observed

EROSION: There was slight to moderate erosion on some areas.

COVER: Because of dangerous slope, cover was estimated by nonconventional methods as 35%.

DOMINANT PLANT SPECIES OBSERVED:

Atriplex confertifolia

Chrysothamnus nauseosus

Eriogonum corymbosum

Halogeton glomeratus

Kochia scopara

Elymus cinereus

Elymus lanceolatus

Stipa hymenoides

- NOTES: 1) Again this year, the slope vegetation looked better than it did last.
- 2) Vegetation cover looked good in some areas with desirable species, while other areas were quite weedy.
- 3) Methods: As previous years, for cover we had to estimate cover from a distance because the slope was much too steep to safely place quadrats.
- 4) We then wrote dominant spp. down
- 5) Some coal fines were mixed in soils/spoils.

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Sediment Storage Slope

AREA: Des-Bee-Dove (1988 Interim Reveg. Area)

DATE: August 19-21, 1994

WORKERS: P. Collins, K. Collins

SLOPE: 3 - 5 deg.

EXPOSURE: S SE

AREA: 4.4 acres

ANIMAL USE/DISTURBANCE: Slight

EROSION: Some slight to moderate erosion on slopes.

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

Atriplex confertifolia

Atriplex gardneri

Chrysothamnus nauseosus

Sarcobatus vermiculatus

Suaeda torreyana

Halogeton glomeratus

Kochia scoparia

Suaeda calceoliformis

NOTES: 1) As last year, mostly weedy, but some woody spp. too.

2) Methods: For cover we placed meter sq. quadrats at placed randomly over entire site.

UP&L-DES BEE DOVE

Sediment Storage Slope

1988 Interim Reveg

Acreage: 4.4 acre

Slope: 3 - 5 deg

Exposure: S,SE

Sample Date: 19-21 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Chrysothamnus nauseosus</i>	0.00	5.00	0.00	2.00	0.00	0.00	0.00
<i>Suaeda torreyana</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Atriplex gardneri</i> var. <i>cuneata</i>	0.00	10.00	40.00	3.00	0.00	0.00	0.00
<i>Sarcobatus vermiculatus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

<i>Halogeton glomeratus</i>	0.00	0.00	0.00	0.00	30.00	30.00	40.00
<i>Kochia scoparia</i>	25.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

<i>Stipa hymenoides</i>	0.00	0.00	0.00	5.00	0.00	0.00	0.00
-------------------------	------	------	------	------	------	------	------

COVER

Total Living Cover	25.00	15.00	40.00	10.00	30.00	30.00	40.00
Litter	10.00	5.00	4.00	5.00	5.00	25.00	20.00
Bareground	60.00	75.00	55.00	80.00	60.00	44.00	35.00
Rock	5.00	5.00	1.00	5.00	5.00	1.00	5.00

% COMPOSITION

Shrubs	0.00	100.00	100.00	50.00	0.00	0.00	0.00
Forbs	100.00	0.00	0.00	0.00	100.00	100.00	100.00
Grasses	0.00	0.00	0.00	50.00	0.00	0.00	0.00

8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	Mean
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44
5.00	35.00	35.00	10.00	0.00	0.00	0.00	0.00	0.00	5.31
25.00	0.00	10.00	25.00	25.00	30.00	0.00	0.00	25.00	12.06
0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.31
5.00	0.00	0.00	5.00	0.00	0.00	20.00	25.00	5.00	10.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.56
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31
35.00	35.00	45.00	40.00	25.00	35.00	20.00	25.00	30.00	30.00
5.00	5.00	10.00	5.00	10.00	5.00	5.00	5.00	5.00	8.06
50.00	55.00	40.00	50.00	55.00	50.00	70.00	65.00	60.00	56.50
10.00	5.00	5.00	5.00	10.00	10.00	5.00	5.00	5.00	5.44
85.71	100.00	100.00	87.50	100.00	100.00	0.00	0.00	83.33	56.66
14.29	0.00	0.00	12.50	0.00	0.00	100.00	100.00	16.67	40.22
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.13

UP&L-DES BEE DOVE
 Sediment Storage Slope
 1988 Interim Reveg
 Acreage: 4.4 acre
 Slope: 3 - 5 deg
 Exposure: S,SE

SDev	Freq	Sample Date: 19-21 Aug 94
		SHRUBS
1.27	12.50	<i>Chrysothamnus nauseosus</i>
11.52	25.00	<i>Suaeda torreyana</i>
13.42	56.25	<i>Atriplex gardneri</i> var. <i>cuneata</i>
1.21	6.25	<i>Sarcobatus vermiculatus</i>
		FORBS
13.46	50.00	<i>Halogeton glomeratus</i>
6.05	6.25	<i>Kochia scoparia</i>
		GRASSES
1.21	6.25	<i>Stipa hymenoides</i>
		COVER
9.35		Total Living Cover
5.87		Litter
11.75		Bareground
2.55		Rock
		% COMPOSITION
45.47		Shrubs
46.61		Forbs
12.10		Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Sediment Pond Banks

AREA: Des-Bee-Dove (1988 Interim Reveg Area)

DATE: August 19-21, 1994

WORKERS: P. Collins, K. Collins

SLOPE: 30 deg.

EXPOSURE: E & W

AREA: .9 acre

ANIMAL USE/DISTURBANCE: None observed

EROSION: Some slight erosion beginning

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

Atriplex confertifolia

Atriplex gardneri

Chrysothamnus nauseosus

Astragalus cicer

Halogeton glomeratus

Kochia scoparia

Salsola pestifer

NOTES: 1) We sampled regularly around the two banks. These areas were marked on the field map.

UP&L-DES BEE DOVE

Sediment Pond Banks

1988 Interim Reveg

Acreage: .9 acre

Slope: 30 deg

Exposure: E & W

Sample Date: 19-21 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

Atriplex gardneri	0.00	0.00	30.00	0.00	0.00	0.00	0.00
Chrysothamnus nauseosus	20.00	30.00	20.00	15.00	0.00	5.00	50.00
Atriplex confertifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

Malcomia africana	0.00	0.00	0.00	10.00	0.00	35.00	0.00
Bassia hyssopifolia	0.00	0.00	0.00	0.00	15.00	0.00	0.00
Kochia scoparia	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

Elymus salinus	15.00	0.00	0.00	0.00	0.00	0.00	0.00
----------------	-------	------	------	------	------	------	------

COVER

Total Living Cover	35.00	30.00	50.00	25.00	15.00	40.00	50.00
Litter	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Bareground	40.00	60.00	35.00	65.00	75.00	50.00	30.00
Rock	20.00	5.00	10.00	5.00	5.00	5.00	15.00

% COMPOSITION

Shrubs	57.14	100.00	100.00	60.00	0.00	12.50	100.00
Forbs	0.00	0.00	0.00	40.00	100.00	87.50	0.00
Grasses	42.86	0.00	0.00	0.00	0.00	0.00	0.00

UP&L-DES BEE DOVE
 Sediment Pond Banks
 1988 Interim Reveg
 Acreage: .9 acre
 Slope: 30 deg
 Exposure: E & W
 Sample Date: 19-21 Aug 94

8.00	9.00	10.00	Mean	SDev	Freq	
						SHRUBS
0.00	0.00	5.00	3.50	8.96	20.00	<i>Atriplex gardneri</i>
20.00	0.00	5.00	16.50	14.67	80.00	<i>Chrysothamnus nauseosus</i>
0.00	10.00	20.00	3.00	6.40	20.00	<i>Atriplex confertifolia</i>
						FORBS
0.00	0.00	0.00	4.50	10.59	20.00	<i>Malcomia africana</i>
0.00	0.00	0.00	1.50	4.50	10.00	<i>Bassia hyssopifolia</i>
0.00	0.00	5.00	0.50	1.50	10.00	<i>Kochia scoparia</i>
						GRASSES
0.00	0.00	0.00	1.50	4.50	10.00	<i>Elymus salinus</i>
						COVER
20.00	10.00	35.00	31.00	13.00		Total Living Cover
10.00	5.00	20.00	7.00	4.58		Litter
45.00	65.00	40.00	50.50	14.22		Bareground
25.00	20.00	5.00	11.50	7.43		Rock
						% COMPOSITION
100.00	100.00	85.71	71.54	36.32		Shrubs
0.00	0.00	14.29	24.18	36.90		Forbs
0.00	0.00	0.00	4.29	12.86		Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Haul Road Bench

AREA: Des-Bee-Dove (1986 Reveg. Area)

DATE: August 19-21, 1994

WORKERS: P. Collins, K. Collins

SLOPE: 3 - 5 deg.

EXPOSURE: SW

ANIMAL USE/DISTURBANCE: Slight

EROSION: Contour furrowing to control erosion continue to hold slope.

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

Atriplex cuneata
Atriplex canescens
Atriplex confertifolia
Artemisia tridentata

Halogeton glomeratus
Kochia scoparia
Malcomia africa
Salsola pestifer

Elymus cinereus
Stipa hymenoides

NOTES:

- 1) Quantitative Methods: We placed a point at regular intervals over the area. From these points we placed the quadrats in random locations.
- 2) There were patches of desirable species and patches of weedy species, were evident in 1993.
- 3) In 1994 the site had more desirable spp.

UP&L-DES BEE DOVE

Haul Road Bench

1986 Reveg Area

Acreage:

Slope: 3-5 deg

Exposure: SW

Sample Date: 19-21 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Atriplex gardneri</i>	5.00	30.00	0.00	5.00	30.00	5.00	0.00
<i>Gutierrezia sarothrae</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

<i>Halogeton glomeratus</i>	5.00	5.00	5.00	5.00	0.00	10.00	0.00
<i>Kochia scoparia</i>	5.00	0.00	0.00	0.00	10.00	0.00	10.00

GRASSES

<i>Elymus cinereus</i>	25.00	5.00	20.00	20.00	0.00	0.00	5.00
<i>Sitanion hystris</i>	0.00	0.00	0.00	0.00	0.00	25.00	10.00

COVER

Total Living Cover	40.00	40.00	25.00	30.00	40.00	40.00	25.00
Litter	10.00	15.00	20.00	10.00	5.00	25.00	25.00
Bareground	30.00	35.00	35.00	35.00	30.00	25.00	40.00
Rock	20.00	10.00	20.00	25.00	25.00	10.00	10.00

% COMPOSITION

Shrubs	12.50	75.00	0.00	16.67	75.00	12.50	0.00
Forbs	25.00	12.50	20.00	16.67	25.00	25.00	40.00
Grasses	62.50	12.50	80.00	66.67	0.00	62.50	60.00

UP&L-DES BEE DOVE
 Haul Road Bench
 1986 Reveg Area
 Acreage:
 Slope: 3-5 deg
 Exposure: SW
 Sample Date: 19-21 Aug 94

8.00	9.00	10.00	Mean	SDev	Freq	
0.00	10.00	0.00	8.50	11.19	60.00	SHRUBS
5.00	0.00	0.00	0.50	1.50	10.00	<i>Atriplex gardneri</i> <i>Gutierrezia sarothrae</i>
15.00	5.00	0.00	5.00	4.47	70.00	FORBS
0.00	5.00	25.00	5.50	7.57	50.00	<i>Halogeton glomeratus</i> <i>Kochia scoparia</i>
0.00	5.00	5.00	8.50	8.96	60.00	GRASSES
0.00	0.00	5.00	4.00	7.68	20.00	<i>Elymus cinereus</i> <i>Sitanion hystrix</i>
20.00	25.00	35.00	32.00	7.48		COVER
20.00	20.00	10.00	16.00	6.63		Total Living Cover
55.00	50.00	50.00	38.50	9.50		Litter
5.00	5.00	5.00	13.50	7.76		Bareground
						Rock
25.00	40.00	0.00	25.67	27.35		% COMPOSITION
75.00	40.00	71.43	35.06	20.84		Shrubs
0.00	20.00	28.57	39.27	28.64		Forbs
						Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Beehive Substation Slope

AREA: Des-Bee-Dove (1986 Reveg. Area)

DATE: August 19-21, 1994

WORKERS: P. Collins, K. Collins

SLOPE: 35 deg.

EXPOSURE: S

AREA: .1 acre

ANIMAL USE/DISTURBANCE: None observed

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

Atriplex confertifolia
Chrysothamnus nauseosus

Penstemon palmeri
Halogeton glomeratus
Salsola pestifer

Agropyron cristatum
Elymus salinus
Elymus cinereus

NOTES: 1) As was the case last year, the area continues to maintain good spp. diversity.

2) Methods: For cover we placed meter sq. quadrats at regular intervals over area.

UP&L-DES BEE DOVE

Beehive Substation Slope

1986 Reveg Area

Acreage: .1 acre

Slope: 35 deg

Exposure: S

Sample Date: 19-21 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 Mean

SHRUBS

<i>Chrysothamnus nauseosus</i>	35.00	20.00	25.00	10.00	15.00	5.00	18.33
<i>Atriplex confertifolia</i>	0.00	0.00	0.00	15.00	0.00	0.00	2.50

FORBS**GRASSES**

<i>Bromus carinatus</i>	0.00	0.00	10.00	5.00	0.00	0.00	2.50
<i>Elymus salinus</i>	0.00	0.00	10.00	0.00	0.00	35.00	7.50
<i>Stipa hymenoides</i>	0.00	0.00	0.00	0.00	5.00	0.00	0.83

COVER

Total Living Cover	35.00	20.00	45.00	30.00	20.00	40.00	31.67
Litter	10.00	5.00	10.00	5.00	5.00	5.00	6.67
Bareground	30.00	15.00	15.00	40.00	15.00	10.00	20.83
Rock	25.00	60.00	30.00	25.00	60.00	45.00	40.83

% COMPOSITION

Shrubs	100.00	100.00	55.56	83.33	75.00	12.50	71.06
Forbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	0.00	0.00	44.44	16.67	25.00	87.50	28.94

UP&L-DES BEE DOVE
Beehive Substation Slope
1986 Reveg Area
Acreage: .1 acre
Slope: 35 deg
Exposure: S

SDev	Freq	Sample Date: 19-21 Aug 94
9.86	100.00	SHRUBS
5.59	16.67	<i>Chrysothamnus nauseosus</i> <i>Atriplex confertifolia</i>

FORBS

		GRASSES
3.82	33.33	<i>Bromus carinatus</i>
12.83	33.33	<i>Elymus salinus</i>
1.86	16.67	<i>Stipa hymenoides</i>

		COVER
9.43		Total Living Cover
2.36		Litter
10.57		Bareground
15.12		Rock

		% COMPOSITION
30.31		Shrubs
0.00		Forbs
30.31		Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Sediment Pond Area

AREA: Des-Bee-Dove (1985 Reveg. Area)

DATE: August 19-21, 1994

WORKERS: P. Collins, K. Collins

SLOPE: 0-10 deg.

EXPOSURE: S

AREA: .7 acre

ANIMAL USE/DISTURBANCE: Rabbit use

EROSION: Negligible

COVER: (See quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quant. data sheet)

Atriplex cuneata

Atriplex canescens

Atriplex confertifolia

Chrysothamnus nauseosus

Chrysothamnus viscidiflorus

Sarcobatus vermiculatus

Halogeton glomeratus

Melilotus officinalis

Salsola pestifer

Elymus spicatus

Elymus salinus

Elymus cinereus

Stipa hymenoides

Sitanion hystrix

NOTES: 1) Like last year the area looked very good.

2) Sampling was done randomly around entire area.

UP&L-DES BEE DOVE

Sediment Pond Area

1985 Reveg Area

Acreage: .7 acre

Slope: 0-10 deg

Exposure: S

Sample Date: 19-21 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

Atriplex canescens	0.00	0.00	30.00	30.00	15.00	20.00	35.00
Gutierrezia sarothrae	25.00	20.00	0.00	0.00	0.00	0.00	0.00
Chrysothamnus nauseosus	0.00	0.00	5.00	0.00	0.00	0.00	0.00
Atriplex confertifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FORBS

Halogeton glomeratus	0.00	0.00	0.00	0.00	5.00	0.00	5.00
----------------------	------	------	------	------	------	------	------

GRASSES

Bromus tectorum	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Hilaria jamesii	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agropyron cristatum	0.00	0.00	0.00	0.00	20.00	15.00	25.00

COVER

Total Living Cover	25.00	20.00	35.00	35.00	40.00	35.00	65.00
Litter	5.00	5.00	15.00	10.00	10.00	10.00	25.00
Bareground	45.00	50.00	40.00	40.00	30.00	45.00	5.00
Rock	25.00	25.00	10.00	15.00	20.00	10.00	5.00

% COMPOSITION

Shrubs	100.00	100.00	100.00	85.71	37.50	57.14	53.85
Forbs	0.00	0.00	0.00	0.00	12.50	0.00	7.69
Grasses	0.00	0.00	0.00	14.29	50.00	42.86	38.46

UP&L-DES BEE DOVE
 Sediment Pond Area
 1985 Reveg Area
 Acreage: .7 acre
 Slope: 0-10 deg
 Exposure: S
 Sample Date: 19-21 Aug 94

8.00	9.00	10.00	Mean	SDev	Freq	
						SHRUBS
40.00	15.00	0.00	18.50	14.33	70.00	<i>Atriplex canescens</i>
0.00	10.00	0.00	5.50	9.07	30.00	<i>Gutierrezia sarothrae</i>
0.00	0.00	10.00	1.50	3.20	20.00	<i>Chrysothamnus nauseosus</i>
0.00	0.00	15.00	1.50	4.50	10.00	<i>Atriplex confertifolia</i>

0.00	0.00	0.00	1.00	2.00	20.00	FORBS
						<i>Halogeton glomeratus</i>

0.00	5.00	0.00	0.50	1.50	10.00	GRASSES
0.00	0.00	0.00	0.50	1.50	10.00	<i>Bromus tectorum</i>
0.00	5.00	5.00	1.00	2.00	20.00	<i>Elymus lanceolatus</i>
10.00	10.00	5.00	8.50	8.67	60.00	<i>Hilaria jamesii</i>
						<i>Agropyron cristatum</i>

50.00	45.00	35.00	38.50	12.05	COVER
10.00	5.00	5.00	10.00	5.92	Total Living Cover
25.00	25.00	30.00	33.50	12.66	Litter
15.00	25.00	30.00	18.00	7.81	Bareground
					Rock
					% COMPOSITION
80.00	55.56	71.43	74.12	21.38	Shrubs
0.00	0.00	0.00	2.02	4.18	Forbs
20.00	44.44	28.57	23.86	18.76	Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Bathhouse Slope

AREA: Des-Bee-Dove (1984 Reveg. Area)

DATE: August 19-21, 1994

WORKERS: P. Collins, K. Collins

SLOPE: 25 deg.

EXPOSURE: variable

AREA: 2.3 acre

ANIMAL USE/DISTURBANCE: Rabbit and cattle.

EROSION: Slight

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

Atriplex confertifolus
Chrysothamnus nauseosus
Eriogonum corymbosum

Halogeton glomeratus
Kochia scoparia

Elymus lanceolatus
Elymus smithii
Agropyron cristatum
Elymus salinus
Stipa hymenoides

- NOTES:
- 1) Site was in "excellent" condition.
 - 2) Vegetative cover remains good & diverse.
 - 3) Methods: For cover we placed meter sq. quadrats at regular intervals at different elevations at right angles on the slope to attempt to adequately represent it.

UP&L-DES BEE DOVE

Bathhouse Slope

1984 Reveg Area

Acreage: 2.3 acre

Slope: 25 deg.

Exposure: variable

Sample Date: 19-21 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

Eriogonum corymbosum	15.00	25.00	25.00	0.00	10.00	15.00	10.00
Chrysothamnus nauseosus	0.00	0.00	0.00	10.00	0.00	0.00	0.00

FORBS

Halogetum glomeratus	0.00	0.00	0.00	5.00	0.00	0.00	0.00
----------------------	------	------	------	------	------	------	------

GRASSES

Elymus cinereus	0.00	0.00	0.00	0.00	10.00	0.00	0.00
Stipa hymenoides	0.00	0.00	10.00	10.00	0.00	0.00	0.00
Elymus smithii	0.00	0.00	0.00	0.00	10.00	0.00	0.00
Elymus lanceolatus	35.00	20.00	0.00	0.00	10.00	25.00	0.00
Bromus tectorum	0.00	0.00	10.00	0.00	0.00	0.00	0.00
Elymus salinus	0.00	0.00	0.00	0.00	0.00	0.00	15.00

COVER

Total Living Cover	50.00	45.00	45.00	25.00	40.00	40.00	25.00
Litter	5.00	20.00	10.00	5.00	10.00	5.00	10.00
Bareground	15.00	15.00	20.00	40.00	15.00	25.00	45.00
Rock	30.00	20.00	25.00	30.00	35.00	30.00	20.00

% COMPOSITION

Shrubs	30.00	55.56	55.56	40.00	25.00	37.50	40.00
Forbs	0.00	0.00	0.00	20.00	0.00	0.00	0.00
Grasses	70.00	44.44	44.44	40.00	75.00	62.50	60.00

UP&L-DES BEE DOVE

Bathhouse Slope

1984 Reveg Area

Acreage: 2.3 acre

Slope: 25 deg.

Exposure: variable

Sample Date: 19-21 Aug 94

8.00	9.00	10.00	Mean	SDev	Freq	
10.00	0.00	15.00	12.50	8.14	80.00	SHRUBS
0.00	0.00	10.00	2.00	4.00	20.00	<i>Eriogonum corymbosum</i> <i>Chrysothamnus nauseosus</i>

5.00	0.00	0.00	1.00	2.00	20.00	FORBS
						<i>Halogetum glomeratus</i>

						GRASSES
5.00	0.00	10.00	2.50	4.03	30.00	<i>Elymus cinereus</i>
0.00	5.00	0.00	2.50	4.03	30.00	<i>Stipa hymenoides</i>
0.00	0.00	0.00	1.00	3.00	10.00	<i>Elymus smithii</i>
0.00	0.00	0.00	9.00	12.41	40.00	<i>Elymus lanceolatus</i>
0.00	0.00	0.00	1.00	3.00	10.00	<i>Bromus tectorum</i>
0.00	20.00	0.00	3.50	7.09	20.00	<i>Elymus salinus</i>

						COVER
20.00	25.00	35.00	35.00	10.00		Total Living Cover
5.00	15.00	10.00	9.50	4.72		Litter
15.00	20.00	35.00	24.50	10.83		Bareground
60.00	40.00	20.00	31.00	11.58		Rock

						% COMPOSITION
50.00	0.00	71.43	40.50	18.71		Shrubs
25.00	0.00	0.00	4.50	9.07		Forbs
25.00	100.00	28.57	55.00	21.86		Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Materials Yard Slope

AREA: Des-Bee-Dove (1984 Reveg. Area)

DATE: August 19-21, 1994

WORKERS: P. Collins, K. Collins

SLOPE: 20-25 deg.

EXPOSURE: SE

AREA: 1.1 acre

ANIMAL USE/DISTURBANCE: None observed

EROSION: Negligible

COVER: (See quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data.)

Atriplex confertifolia

Atriplex gardneri

Chrysothamnus nauseosus

Aster chilensis

Elymus lanceolatus

Elymus smithii

Elymus salinus

Stipa hymenoides

NOTES: 1) Site looked better than I've seen it. It looked "excellent".

2) Methods: For cover we placed meter sq. quadrats at random location over the entire slope.

UP&L-DES BEE DOVE

Material Yard Slope

1984 Reveg Area

Acreage: 1.1 acre

Slope: 20-25 deg

Exposure: SE

Sample Date: 19-21 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Chrysothamnus nauseosus</i>	10.00	0.00	0.00	5.00	5.00	5.00	10.00
<i>Gutierrezia sarothrae</i>	0.00	10.00	5.00	0.00	0.00	0.00	0.00

FORBS

<i>Aster chilensis</i>	0.00	0.00	0.00	0.00	0.00	1.00	0.00
<i>Grindelia squarrosa</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

<i>Bromus carinatus</i>	0.00	0.00	0.00	0.00	0.00	5.00	10.00
<i>Elymus smithii</i>	0.00	5.00	10.00	0.00	0.00	0.00	0.00
<i>Elymus lanceolatus</i>	30.00	25.00	20.00	20.00	35.00	10.00	15.00
<i>Elymus cinereus</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00
<i>Stipa hymenoides</i>	0.00	0.00	10.00	5.00	0.00	9.00	10.00

COVER

Total Living Cover	40.00	40.00	50.00	30.00	40.00	30.00	45.00
Litter	10.00	10.00	10.00	5.00	10.00	5.00	10.00
Bareground	25.00	20.00	30.00	25.00	25.00	25.00	20.00
Rock	25.00	30.00	10.00	40.00	25.00	40.00	25.00

% COMPOSITION

Shrubs	25.00	25.00	10.00	16.67	12.50	16.67	22.22
Forbs	0.00	0.00	0.00	0.00	0.00	3.33	0.00
Grasses	75.00	75.00	90.00	83.33	87.50	80.00	77.78

UP&L-DES BEE DO
 Material Yard Slope
 1984 Reveg Area
 Acreage: 1.1 acre
 Slope: 20-25 deg
 Exposure: SE
 Sample Date: 19-21

8.00	9.00	10.00	Mean	SDev	Freq	
25.00	0.00	20.00	8.00	8.12	70.00	SHRUBS
0.00	0.00	0.00	1.50	3.20	20.00	<i>Chrysothamnus nau</i> <i>Gutierrezia sarothra</i>

0.00	0.00	0.00	0.10	0.30	10.00	FORBS
0.00	35.00	10.00	4.50	10.59	20.00	<i>Aster chilensis</i> <i>Grindelia squarrosa</i>

0.00	0.00	0.00	1.50	3.20	20.00	GRASSES
10.00	0.00	10.00	3.50	4.50	30.00	<i>Bromus carinatus</i>
0.00	0.00	10.00	16.50	11.19	80.00	<i>Elymus smithii</i>
5.00	0.00	0.00	1.00	2.00	20.00	<i>Elymus lanceolatus</i>
0.00	30.00	0.00	6.40	8.92	50.00	<i>Elymus cinereus</i>
						<i>Stipa hymenoides</i>

40.00	65.00	50.00	43.00	9.80	COVER
5.00	10.00	10.00	8.50	2.29	Total Living Cover
15.00	5.00	15.00	20.50	6.87	Litter
40.00	20.00	25.00	28.00	9.27	Bareground
					Rock

62.50	0.00	40.00	23.06	16.57	% COMPOSITION
0.00	53.85	20.00	7.72	16.48	Shrubs
37.50	46.15	40.00	69.23	19.01	Forbs
					Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Test Plot (1989)

AREA: Des-Bee-Dove

DATE: August 19-21, 1994

WORKERS: P. Collins, K. Collins

SLOPE: 26 deg.

EXPOSURE: S

AREA: .6 acre

ANIMAL USE/DISTURBANCE: None observed within fence.

EROSION: Some erosion has begun that will probably cause problems with the plot in the future.

COVER: Cover was from mostly weedy species.

PLANT SPECIES PLANTED

Atriplex canescens
Atriplex corrugata
Atriplex confertifolia
Ceratoides lanata
Kochia prostrata

Linum lewisi
Medilotus officinalis
Sphaeralcea coccinea

Elymus lanceolatus
Elymus smithii?
Elymus cinereus
Stipa hymenoides
Sporobolus airoides

PLANT SPECIES OBSERVED

Sarcobatus vermiculatus
Suaeda torreyana
Atriplex canescens

(Annual chenopod)
Kochia scoparia
Bassia hyssopifolia
Kochia scoparia

Elymus smithii
Elymus lanceolatus

NOTES: 1) Woody species density was low.

2) Recorded qualitative data only.

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Test Plot (1992)

AREA: Des-Bee-Dove

DATE: September 6-10, 1994

WORKERS: P. Collins, D. Collins

SLOPE: 3-5 deg.

EXPOSURE: SW

ANIMAL USE/DISTURBANCE: None

EROSION: None, had erosion control mat recently installed.

COVER: (see quantitative data)

PLANT SPECIES OBSERVED

Ceratoides lanata

Kochia scoparia
Melilotus officinalis
Bassia hyssopifolia
Halogeton glomeratus

Stipa hymenoides
Bromus tectorum
Elymus lanceolatus
Elymus smithii
Elymus cinereus
Elymus salinus
Sitanion hystrix

WOODY SPECIES DENSITY:

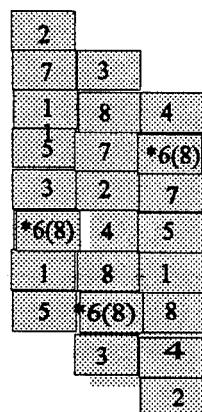
Plot	Plant Name	Mean No./Acre
1.	<u>Ceratoides lanata</u>	
	Total	<u>1763.14</u>
2.	<u>Ceratoides lanata</u>	
	Total	<u>3630.00</u>
3.	<u>Ceratoides lanata</u>	
	Total	<u>207.43</u>

Page 2
Test Plot
1994

4.	<u>Ceratooides lanata</u>	
	Total	<u>1244.57</u>
5.	<u>Ceratooides lanata</u>	
	Total	<u>829.72</u>
6(8).	<u>Ceratooides lanata</u>	
	Total	<u>207.43</u>
7.	<u>Ceratooides lanata</u>	
	Total	<u>0.00</u>
8.	<u>Ceratooides lanata</u>	
	Total	<u>103.71</u>

- NOTES: 1) We did not look at treatments before sampling as an attempt to decrease bias.
2) For cover we put 3 quadrats in each 10' X 14' plot, side by side leaving the edges for a buffer. Therefore, nearly the entire plot was sampled.
3) For density we counted all within each plot.
4) Refer to the map for the order.
5) Most of the desirable plant species were becoming established in the contour depressions where moisture collects.

NORTH



1. Rocky Soil
2. Coal Waste
3. Live Earth
4. Rocky Soil & Live Earth
5. Coal Waste & Live Earth
6. Sewage Slud.
7. Native Seed
8. Nursery Seed

UP&L-DES BEE DOVE

TEST PLOT (1992)

Subplots #1

Acreage:

Slope: 3-5 deg

1-3 = 1A

4-6 = 1B

Exposure: SW

Sample Date: 6-10 Sept 94

1.00

2.00

3.00

4.00

5.00

6.00

SHRUBS

Ceratoides lanata

0.00

0.00

0.00

0.00

0.00

0.00

FORBS

Halogeton glomeratus

20.00

20.00

15.00

14.00

25.00

5.00

Salsola pestifer

0.00

0.00

0.00

5.00

0.00

0.00

GRASSES

Elymus lanceolatus

5.00

0.00

15.00

0.00

0.00

5.00

Elymus smithii

0.00

0.00

0.00

1.00

0.00

0.00

Elymus cinereus

0.00

0.00

0.00

0.00

0.00

0.00

COVER

Total Living Cover

25.00

20.00

30.00

20.00

25.00

10.00

Litter

5.00

5.00

10.00

5.00

5.00

5.00

Bareground

60.00

70.00

50.00

50.00

50.00

80.00

Rock

10.00

5.00

10.00

25.00

20.00

5.00

% COMPOSITION

Shrubs

0.00

0.00

0.00

0.00

0.00

0.00

Forbs

80.00

100.00

50.00

95.00

100.00

50.00

Grasses

20.00

0.00

50.00

5.00

0.00

50.00

UP&L-DES BEE DO
TEST PLOT (1992)
Subplots #1
Acreage:
Slope: 3-5 deg
Exposure: SW
Sample Date: 6-10 S

7-9 = 1C

7.00	8.00	9.00	Mean	SDev	Freq	
0.00	0.00	5.00	0.56	1.57	11.11	SHRUBS <i>Ceratoides lanata</i>

15.00	25.00	5.00	16.00	7.01	100.00	FORBS
0.00	0.00	0.00	0.56	1.57	11.11	<i>Halogeton glomeratus</i> <i>Salsola pestifer</i>

20.00	15.00	25.00	9.44	8.96	66.67	GRASSES
5.00	5.00	5.00	1.78	2.30	44.44	<i>Elymus lanceolatus</i>
0.00	0.00	5.00	0.56	1.57	11.11	<i>Elymus smithii</i> <i>Elymus cinereus</i>

40.00	45.00	45.00	28.89	11.49	COVER
5.00	5.00	5.00	5.56	1.57	Total Living Cover
35.00	45.00	40.00	53.33	13.54	Litter
20.00	5.00	10.00	12.22	7.11	Bareground
					Rock

0.00	0.00	11.11	1.23	3.49	% COMPOSITION
37.50	55.56	11.11	64.35	29.38	Shrubs
62.50	44.44	77.78	34.41	27.28	Forbs
					Grasses

UP&L-DES BEE DOVE

TEST PLOT (1992)

Subplots #2

Acreage:

Slope: 3-5 deg

1-3 = 2A

4-6 = 2B

Exposure: SW

Sample Date: 6-10 Sept 94

1.00 2.00 3.00 4.00 5.00 6.00

SHRUBS

Ceratoides lanata 0.00 0.00 0.00 0.00 5.00 0.00

FORBS

Halogenon glomeratus	2.00	1.00	0.00	2.00	15.00	10.00
Kochia scoparia	3.00	5.00	0.00	0.00	0.00	0.00
Bassia hyssopifolia	0.00	4.00	25.00	0.00	0.00	0.00
Melilotus officinalis	0.00	0.00	0.00	8.00	5.00	0.00

GRASSES

Bromus tectorum	0.00	5.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	30.00	0.00	0.00	10.00	0.00	0.00
Elymus smithii	0.00	5.00	10.00	0.00	5.00	10.00

COVER

Total Living Cover	35.00	20.00	35.00	20.00	30.00	20.00
Litter	5.00	5.00	5.00	5.00	10.00	10.00
Bareground	50.00	60.00	55.00	65.00	50.00	50.00
Rock	10.00	15.00	5.00	10.00	10.00	20.00

% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	16.67	0.00
Forbs	14.29	50.00	71.43	50.00	66.67	50.00
Grasses	85.71	50.00	28.57	50.00	16.67	50.00

UP&L-DES BEE DOVE
TEST PLOT (1992)
Subplots #2
Acreage:
Slope: 3-5 deg
Exposure: SW
Sample Date: 6-10 Sept 94

7-9 = 2C

7.00	8.00	9.00	Mean	SDev	Freq	
0.00	10.00	5.00	2.22	3.42	33.33	SHRUBS <i>Ceratoides lanata</i>
0.00	15.00	20.00	7.22	7.38	77.78	FORBS <i>Halogeton glomeratus</i>
0.00	0.00	0.00	0.89	1.73	22.22	<i>Kochia scoparia</i>
0.00	0.00	0.00	3.22	7.80	22.22	<i>Bassia hyssopifolia</i>
0.00	0.00	0.00	1.44	2.79	22.22	<i>Melilotus officinalis</i>
0.00	0.00	0.00	0.56	1.57	11.11	GRASSES <i>Bromus tectorum</i>
15.00	5.00	10.00	7.78	9.46	55.56	<i>Elymus lanceolatus</i>
10.00	5.00	0.00	5.00	4.08	66.67	<i>Elymus smithii</i>
25.00	35.00	35.00	28.33	6.67		COVER Total Living Cover
5.00	5.00	5.00	6.11	2.08		Litter
65.00	55.00	50.00	55.56	5.98		Bareground
5.00	5.00	10.00	10.00	4.71		Rock
0.00	28.57	14.29	6.61	10.03		% COMPOSITION
0.00	42.86	57.14	44.71	22.02		Shrubs
100.00	28.57	28.57	48.68	26.35		Forbs
						Grasses

UP&L-DES BEE DOVE

TEST PLOT (1992)

Subplots #3

Acreage:

Slope: 3-5 deg

1-3 = 3A

4-6 = 3B

Exposure: SW

Sample Date: 6-10 Sept 94

1.00

2.00

3.00

4.00

5.00

6.00

SHRUBS

Ceratoides lanata

0.00

0.00

1.00

0.00

0.00

0.00

FORBS

Halogeton glomeratus

7.00

10.00

15.00

25.00

20.00

0.00

Melilotus officinalis

0.00

0.00

0.00

0.00

0.00

0.00

GRASSES

Elymus lanceolatus

8.00

0.00

4.00

0.00

10.00

20.00

Elymus smithii

0.00

0.00

0.00

0.00

0.00

0.00

Elymus cinereus

0.00

0.00

0.00

0.00

0.00

5.00

COVER

Total Living Cover

15.00

10.00

20.00

25.00

30.00

25.00

Litter

3.00

4.00

10.00

4.00

4.00

5.00

Bareground

80.00

85.00

69.00

70.00

65.00

65.00

Rock

2.00

1.00

1.00

1.00

1.00

5.00

% COMPOSITION

Shrubs

0.00

0.00

5.00

0.00

0.00

0.00

Forbs

46.67

100.00

75.00

100.00

66.67

0.00

Grasses

53.33

0.00

20.00

0.00

33.33

100.00

UP&L-DES BEE DOVE
TEST PLOT (1992)
Subplots #3
Acreage:
Slope: 3-5 deg
Exposure: SW
Sample Date: 6-10 Sept 94

7-9 = 3C

7.00	8.00	9.00	Mean	SDev	Freq	
0.00	0.00	5.00	0.67	1.56	11.11	SHRUBS <i>Ceratoides lanata</i>
0.00	5.00	0.00	9.11	8.67	66.67	FORBS <i>Halogeton glomeratus</i>
5.00	0.00	0.00	0.56	1.57	11.11	<i>Melilotus officinalis</i>
15.00	0.00	25.00	9.11	8.71	66.67	GRASSES <i>Elymus lanceolatus</i>
0.00	20.00	5.00	2.78	6.29	22.22	<i>Elymus smithii</i>
0.00	0.00	0.00	0.56	1.57	11.11	<i>Elymus cinereus</i>
20.00	25.00	35.00	22.78	7.11		COVER
4.00	4.00	4.00	4.67	1.94		Total Living Cover
75.00	70.00	60.00	71.00	7.39		Litter
1.00	1.00	1.00	1.56	1.26		Bareground
						Rock
0.00	0.00	14.29	2.14	4.57		% COMPOSITION
25.00	20.00	0.00	48.15	37.13		Shrubs
75.00	80.00	85.71	49.71	35.73		Forbs
						Grasses

UP&L-DES BEE DOVE

TEST PLOT (1992)

Subplots #4

Acreage:

Slope: 3-5 deg

1-3 = 4A

4-6 = 4B

Exposure: SW

Sample Date: 6-10 Sept 94

1.00 2.00 3.00 4.00 5.00 6.00

SHRUBS

Ceratoides lanata	4.00	0.00	0.00	0.00	0.00	0.00
-------------------	------	------	------	------	------	------

FORBS

Halogeton glomeratus	1.00	25.00	20.00	3.00	10.00	0.00
Kochia scoparia	0.00	0.00	2.00	2.00	0.00	0.00
Salsola pestifer	0.00	0.00	3.00	0.00	0.00	0.00
Melilotus officinalis	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

Elymus cinereus	0.00	0.00	5.00	0.00	0.00	0.00
Elymus smithii	25.00	0.00	0.00	5.00	0.00	5.00
Elymus lanceolatus	5.00	5.00	0.00	25.00	20.00	30.00
Stipa hymenoides	0.00	0.00	0.00	0.00	0.00	5.00

COVER

Total Living Cover	35.00	30.00	30.00	35.00	30.00	40.00
Litter	5.00	5.00	5.00	5.00	5.00	5.00
Bareground	40.00	55.00	55.00	40.00	35.00	45.00
Rock	20.00	10.00	10.00	20.00	30.00	10.00

% COMPOSITION

Shrubs	11.43	0.00	0.00	0.00	0.00	0.00
Forbs	2.86	83.33	83.33	14.29	33.33	0.00
Grasses	85.71	16.67	16.67	85.71	66.67	100.00

UP&L-DES BEE DOVE
TEST PLOT (1992)

Subplots #4

Acreage:

Slope: 3-5 deg

Exposure: SW

Sample Date: 6-10 Sept 94

7-9 = 4C

7.00	8.00	9.00	Mean	SDev	Freq	
-----						SHRUBS
0.00	5.00	0.00	1.00	1.89	22.22	<i>Ceratoides lanata</i>
-----						FORBS
5.00	5.00	10.00	8.78	8.11	88.89	<i>Halogeton glomeratus</i>
0.00	0.00	5.00	1.00	1.63	33.33	<i>Kochia scoparia</i>
0.00	0.00	0.00	0.33	0.94	11.11	<i>Salsola pestifer</i>
5.00	0.00	0.00	0.56	1.57	11.11	<i>Melilotus officinalis</i>
-----						GRASSES
0.00	0.00	0.00	0.56	1.57	11.11	<i>Elymus cinereus</i>
0.00	5.00	10.00	5.56	7.62	55.56	<i>Elymus smithii</i>
25.00	20.00	10.00	15.56	10.12	88.89	<i>Elymus lanceolatus</i>
0.00	0.00	0.00	0.56	1.57	11.11	<i>Stipa hymenoides</i>
-----						COVER
35.00	35.00	35.00	33.89	3.14		Total Living Cover
5.00	5.00	5.00	5.00	0.00		Litter
35.00	50.00	50.00	45.00	7.45		Bareground
25.00	10.00	10.00	16.11	7.37		Rock
-----						% COMPOSITION
0.00	14.29	0.00	2.86	5.39		Shrubs
28.57	14.29	42.86	33.65	29.59		Forbs
71.43	71.43	57.14	63.49	27.65		Grasses

UP&L-DES BEE DOVE

TEST PLOT (1992)

Subplots #5

Acreage:

Slope: 3-5 deg

1-3 = 5A

4-6 = 5B

Exposure: SW

Sample Date: 6-10 Sept 94

1.00

2.00

3.00

4.00

5.00

6.00

SHRUBS

Ceratoides lanata

0.00

1.00

0.00

5.00

3.00

2.00

FORBS

Kochia scoparia

2.00

0.00

0.00

0.00

0.00

0.00

Halogenon glomeratus

3.00

5.00

2.00

2.00

5.00

0.00

Bassia hyssopifolia

0.00

4.00

0.00

0.00

0.00

0.00

Melilotus officinalis

5.00

0.00

5.00

0.00

0.00

3.00

Salsola pestifer

0.00

0.00

0.00

5.00

2.00

0.00

GRASSES

Stipa hymenoides

0.00

5.00

0.00

0.00

0.00

0.00

Elymus lanceolatus

0.00

0.00

8.00

0.00

0.00

25.00

Elymus smithii

25.00

0.00

20.00

3.00

5.00

5.00

COVER

Total Living Cover

35.00

15.00

35.00

15.00

15.00

35.00

Litter

5.00

10.00

15.00

5.00

10.00

5.00

Bareground

40.00

60.00

35.00

55.00

50.00

50.00

Rock

20.00

15.00

15.00

25.00

25.00

10.00

% COMPOSITION

Shrubs

0.00

6.67

0.00

33.33

20.00

5.71

Forbs

28.57

60.00

20.00

46.67

46.67

8.57

Grasses

71.43

33.33

80.00

20.00

33.33

85.71

UP&L-DES BEE DOVE
TEST PLOT (1992)

Subplots #5

Acreage:

Slope: 3-5 deg

Exposure: SW

Sample Date: 6-10 Sept 94

7-9 = 5C

7.00	8.00	9.00	Mean	SDev	Freq	
0.00	5.00	0.00	1.78	1.99	55.56	SHRUBS <i>Ceratoides lanata</i>

FORBS

0.00	0.00	10.00	1.33	3.13	22.22	Kochia scoparia
10.00	5.00	0.00	3.56	2.95	77.78	Halogeton glomeratus
0.00	0.00	0.00	0.44	1.26	11.11	Bassia hyssopifolia
0.00	0.00	0.00	1.44	2.11	33.33	Melilotus officinalis
0.00	0.00	0.00	0.78	1.62	22.22	Salsola pestifer

GRASSES

0.00	0.00	0.00	0.56	1.57	11.11	<i>Stipa hymenoides</i>
20.00	20.00	25.00	10.89	10.79	55.56	<i>Elymus lanceolatus</i>
10.00	5.00	0.00	8.11	8.28	77.78	<i>Elymus smithii</i>

COVER

40.00	35.00	35.00	28.89	9.94	Total Living Cover
5.00	5.00	5.00	7.22	3.42	Litter
35.00	55.00	55.00	48.33	8.82	Bareground
20.00	5.00	5.00	15.56	7.24	Rock

% COMPOSITION

0.00	14.29	0.00	8.89	10.96	Shrubs
25.00	14.29	28.57	30.93	15.93	Forbs
75.00	71.43	71.43	60.19	22.85	Grasses

UP&L-DES BEE DOVE

TEST PLOT (1992)

Subplots #6(8)

Acreage:

Slope: 3-5 deg

1-3 = 6(8)A

4-6 = 6(8)B

Exposure: SW

Sample Date: 6-10 Sept 94

1.00 2.00 3.00 4.00 5.00 6.00

SHRUBS

Ceratoides lanata

0.00 0.00 1.00 0.00 0.00 0.00

FORBS

Halogeton glomeratus

5.00 10.00 9.00 8.00 10.00 5.00

Kochia scoparia

0.00 0.00 0.00 0.00 0.00 0.00

GRASSES

Elymus smithii

0.00 0.00 0.00 7.00 0.00 5.00

Elymus lanceolatus

0.00 0.00 0.00 0.00 0.00 15.00

Bromus tectorum

0.00 0.00 0.00 0.00 0.00 0.00

COVER

Total Living Cover

5.00 10.00 10.00 15.00 10.00 25.00

Litter

2.00 4.00 2.00 5.00 4.00 5.00

Bareground

90.00 85.00 85.00 70.00 85.00 65.00

Rock

3.00 1.00 3.00 10.00 1.00 5.00

% COMPOSITION

Shrubs

0.00 0.00 10.00 0.00 0.00 0.00

Forbs

100.00 100.00 90.00 53.33 100.00 20.00

Grasses

0.00 0.00 0.00 46.67 0.00 80.00

UP&L-DES BEE DOVE

TEST PLOT (1992)

Subplots #6(8)

Acreage:

Slope: 3-5 deg

Exposure: SW

Sample Date: 6-10 Sept 94

7-9 = 6(8)C

7.00	8.00	9.00	Mean	SDev	Freq	
0.00	0.00	0.00	0.11	0.31	11.11	SHRUBS <i>Ceratoides lanata</i>
0.00	20.00	2.00	7.67	5.48	28.89	FORBS <i>Halogeton glomeratus</i>
2.00	0.00	0.00	0.22	0.63	11.11	<i>Kochia scoparia</i>
0.00	0.00	3.00	1.67	2.54	33.33	GRASSES <i>Elymus smithii</i>
8.00	10.00	20.00	5.89	7.28	44.44	<i>Elymus lanceolatus</i>
0.00	0.00	5.00	0.56	1.57	11.11	<i>Bromus tectorum</i>
10.00	30.00	30.00	16.11	9.06		COVER
1.00	4.00	4.00	3.44	1.34		Total Living Cover
80.00	65.00	65.00	76.67	9.72		Litter
9.00	1.00	1.00	3.78	3.33		Bareground
0.00	0.00	0.00	1.11	3.14		Rock
20.00	66.67	6.67	61.85	36.21		% COMPOSITION
80.00	33.33	93.33	37.04	37.20		Shrubs
						Forbs
						Grasses

UP&L-DES BEE DOVE

TEST PLOT (1992)

Subplots #7

Acreage:

Slope: 3-5 deg

1-3 = 7A

4-6 = 7B

Exposure: SW

Sample Date: 6-10 Sept 94

1.00 2.00 3.00 4.00 5.00 6.00

SHRUBS

FORBS

Kochia scoparia	5.00	0.00	0.00	0.00	0.00	5.00
Halogeton glomeratus	0.00	10.00	20.00	15.00	10.00	20.00
Salsola pestifer	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

Elymus lanceolatus	5.00	0.00	0.00	5.00	0.00	0.00
Stipa hymenoides	0.00	0.00	0.00	0.00	5.00	0.00
Elymus cinereus	0.00	0.00	0.00	5.00	0.00	0.00

COVER

Total Living Cover	10.00	10.00	20.00	25.00	15.00	25.00
Litter	1.00	1.00	4.00	4.00	4.00	5.00
Bareground	88.00	88.00	75.00	70.00	80.00	65.00
Rock	1.00	1.00	1.00	1.00	1.00	5.00

% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	50.00	100.00	100.00	60.00	66.67	100.00
Grasses	50.00	0.00	0.00	40.00	33.33	0.00

UP&L-DES BEE DOVE

TEST PLOT (1992)

Subplots #7

Acreage:

Slope: 3-5 deg

Exposure: SW

Sample Date: 6-10 Sept 94

7-9 = 7C

7.00	8.00	9.00	Mean	SDev	Freq
------	------	------	------	------	------

SHRUBS

0.00	0.00	25.00	3.89	7.74	33.33	FORBS
15.00	20.00	0.00	12.22	7.49	77.78	<i>Kochia scoparia</i>
5.00	0.00	0.00	0.56	1.57	11.11	<i>Halogeton glomeratus</i>
						<i>Salsola pestifer</i>

0.00	0.00	0.00	1.11	2.08	22.22	GRASSES
5.00	0.00	10.00	2.22	3.42	33.33	<i>Elymus lanceolatus</i>
0.00	0.00	0.00	0.56	1.57	11.11	<i>Stipa hymenoides</i>
						<i>Elymus cinereus</i>

25.00	20.00	35.00	20.56	7.62	COVER
4.00	5.00	4.00	3.56	1.42	Total Living Cover
70.00	70.00	60.00	74.00	9.15	Litter
1.00	5.00	1.00	1.89	1.66	Bareground
					Rock

0.00	0.00	0.00	0.00	0.00	% COMPOSITION
80.00	100.00	71.43	80.90	18.69	Shrubs
20.00	0.00	28.57	19.10	18.69	Forbs
					Grasses

UP&L-DES BEE DOVE

TEST PLOT (1992)

Subplots #8

Acreage:

Slope: 3-5 deg

1-3 = 8A

4-6 = 8B

Exposure: SW

Sample Date: 6-10 Sept 94

1.00 2.00 3.00 4.00 5.00 6.00

SHRUBS

FORBS

Halogeton glomeratus	25.00	15.00	20.00	0.00	10.00	15.00
----------------------	-------	-------	-------	------	-------	-------

GRASSES

Stipa hymenoides	0.00	5.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	0.00	0.00	5.00	5.00	10.00	5.00
Elymus smithii	0.00	0.00	5.00	20.00	0.00	0.00
Elymus cinereus	0.00	0.00	0.00	0.00	0.00	5.00

COVER

Total Living Cover	25.00	20.00	30.00	25.00	20.00	25.00
Litter	5.00	2.00	3.00	5.00	4.00	5.00
Bareground	65.00	75.00	65.00	65.00	75.00	65.00
Rock	5.00	3.00	2.00	5.00	1.00	5.00

% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	100.00	75.00	66.67	0.00	50.00	60.00
Grasses	0.00	25.00	33.33	100.00	50.00	40.00

UP&L-DES BEE DOVE
TEST PLOT (1992)
Subplots #8
Acreage:
Slope: 3-5 deg
Exposure: SW
Sample Date: 6-10 Sept 94

7-9 = 8C

7.00	8.00	9.00	Mean	SDev	Freq
------	------	------	------	------	------

SHRUBS

20.00	15.00	15.00	15.00	6.67	22.89	FORBS <i>Halogeton glomeratus</i>
-------	-------	-------	-------	------	-------	--------------------------------------

0.00	0.00	0.00	0.56	1.57	11.11	GRASSES
0.00	10.00	5.00	4.44	3.69	66.67	<i>Stipa hymenoides</i>
0.00	0.00	0.00	2.78	6.29	22.22	<i>Elymus lanceolatus</i>
0.00	0.00	0.00	0.56	1.57	11.11	<i>Elymus smithii</i>
						<i>Elymus cinereus</i>

20.00	25.00	20.00	23.33	3.33	COVER
4.00	4.00	5.00	4.11	0.99	Total Living Cover
75.00	70.00	70.00	69.44	4.37	Litter
1.00	1.00	5.00	3.11	1.79	Bareground
					Rock

0.00	0.00	0.00	0.00	0.00	% COMPOSITION
100.00	60.00	75.00	65.19	28.19	Shrubs
0.00	40.00	25.00	34.81	28.19	Forbs
					Grasses

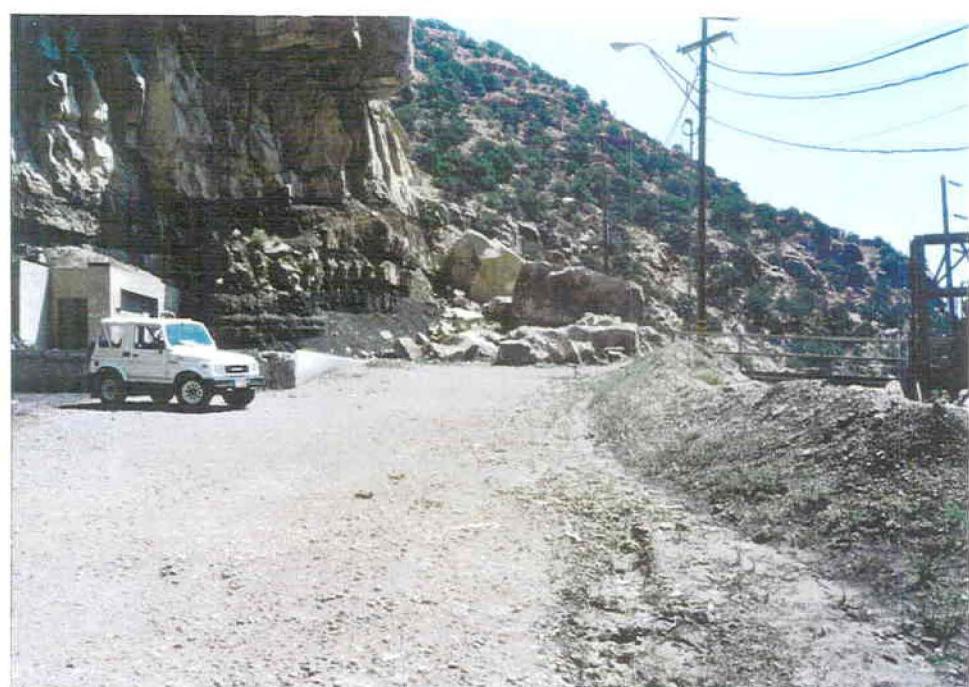
COLOR PHOTOGRAPHS OF THE REVEGETATION MONITORING SITES FOR PACIFICORP (AUG - SEPT 1994)



Des Bee Dove - Beehive Yard Slope



Des Bee Dove - Beehive Road Berm



Des Bee Dove - Deseret Road Berm



Des Bee Dove - Portal Road Berm



Des Bee Dove - Bathhouse Road Berm



Des Bee Dove - Sediment Storage Slope



Des Bee Dove - Sediment Pond Banks



Des Bee Dove - Haul Road Bench

COLOR PHOTOGRAPHS OF THE REVEGETATION MONITORING SITES FOR PACIFICORP (AUG - SEPT 1994)



Des Bee Dove - Beenive Substation Slope



Des Bee Dove - Sediment Pond Area



Des Bee Dove - Bathhouse Slope



Des Bee Dove - Material Yard Slope



Des Bee Dove - Test Plots '89



Des Bee Dove - Test Plots '92 (1 of 3)



Des Bee Dove - Test Plots '92 (2 of 3)



Des Bee Dove - Test Plots '92 (3 of 3)

DEER CREEK AREA

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Riparian Areas

AREA: Deer Creek Mine Area

DATE: August 15-19, 1994

WORKERS: P. Collins

SLOPE: 1 to 5 deg.

EXPOSURE: variable

AREA: < .5 acre

ANIMAL USE/DISTURBANCE: slight

EROSION: negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

Mahonia repens

Chenopodium fremontii

Chrysanthemus nauseosus

Helianthus annus

Kochia scoparia

Melilotus officinalis

Salsola pestifer

Circium sp.

Agropyron cristatum

Elymus elongatus

Elymus smithii

Elymus cinereus

Stipa hymenoides

Poa pratensis

NOTES: 1) We sampled both riparian areas and combined data.

- 2) The north riparian area is #'s 1-5, south is #'s 6-10 on the quant. data summary.
- 3) > 25% weedy species by cover on north area.
- 4) < 25% weeds on the south area.

UP&L-DEER CREEK

Riparian Areas

Acreage: <.5 acre

Slope: 1-5 deg

Exposure: variable

Sample Date: 15-19 Aug 94

North 1-5

	1.00	2.00	3.00	4.00	5.00	6.00	7.00
--	------	------	------	------	------	------	------

SHRUBS

Rosa woodssii	5.00	5.00	10.00	10.00	10.00	0.00	0.00
Mahonia repens	0.00	0.00	0.00	10.00	0.00	0.00	0.00

FORBS

Circium sp.	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Aster chilensis	0.00	0.00	0.00	0.00	0.00	15.00	0.00
Grindelia squarrosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Machaeranthera canescens	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kochia scoparia	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sisymbrium altissimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

Elymus elongatus	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Agropyron cristatum	30.00	20.00	5.00	0.00	35.00	15.00	10.00
Elymus lanceolatus	0.00	5.00	0.00	0.00	0.00	10.00	20.00
Elymus hispidus	0.00	5.00	15.00	0.00	0.00	0.00	10.00
Stipa hymenoides	0.00	0.00	0.00	10.00	0.00	0.00	0.00

COVER

Total Living Cover	40.00	35.00	30.00	35.00	45.00	40.00	40.00
Litter	25.00	10.00	20.00	20.00	10.00	5.00	35.00
Bareground	25.00	50.00	45.00	40.00	40.00	15.00	5.00
Rock	10.00	5.00	5.00	5.00	5.00	40.00	20.00

% COMPOSITION

Shrubs	12.50	14.29	33.33	57.14	22.22	0.00	0.00
Forbs	0.00	0.00	0.00	14.29	0.00	37.50	0.00
Grasses	87.50	85.71	66.67	28.57	77.78	62.50	100.00

UP&L-DEER CREEK

Riparian Areas

Acreage: < .5 acre

Slope: 1-5 deg

Exposure: variable

Sample Date: 15-19 Aug 94

South 6-10

8.00

9.00

10.00

Mean

SDev

Freq

SHRUBS

0.00	0.00	0.00	4.00	4.36	50.00
0.00	0.00	0.00	1.00	3.00	10.00

*Rosa woodsii**Mahonia repens*

FORBS

0.00	0.00	0.00	0.50	1.50	10.00
0.00	0.00	0.00	1.50	4.50	10.00
15.00	0.00	0.00	1.50	4.50	10.00
0.00	10.00	0.00	1.00	3.00	10.00
0.00	15.00	5.00	2.00	4.58	20.00
0.00	0.00	5.00	0.50	1.50	10.00

*Circium sp.**Aster chilensis**Grindelia squarrosa**Machaeranthera canescens**Kochia scoparia**Sisymbrium altissimum*

GRASSES

0.00	0.00	0.00	0.50	1.50	10.00
0.00	10.00	15.00	14.00	11.14	80.00
10.00	0.00	0.00	4.50	6.50	40.00
0.00	0.00	0.00	3.00	5.10	30.00
0.00	0.00	0.00	1.00	3.00	10.00

*Elymus elongatus**Agropyron cristatum**Elymus lanceolatus**Elymus hispidus**Stipa hymenoides*

COVER

25.00	35.00	25.00	35.00	6.32
65.00	55.00	60.00	30.50	21.03
5.00	5.00	5.00	23.50	17.76
5.00	5.00	10.00	11.00	10.68

Total Living Cover

Litter

Bareground

Rock

% COMPOSITION

0.00	0.00	0.00	13.95	18.12
60.00	71.43	40.00	22.32	26.32
40.00	28.57	60.00	63.73	23.71

Shrubs

Forbs

Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Sediment Pond Dam

AREA: Deer Creek Mine Area

DATE: August 15-19, 1994

WORKERS: P. Collins

SLOPE: 1 - 25 deg.

EXPOSURE: variable

AREA: < 2 acres

ANIMAL USE/DISTURBANCE: moderate

EROSION: negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

Aster foliaceus

Bassia hyssopifolia

Grindelia squarrosa

Kochia scoparia

Machaeranthera canescens

Melilotus officinalis

Penstemon sp.

Salsola pestifer

Elymus smithii

Elymus cinereus

Stipa hymenoides

NOTES: 1) <25% weeds by cover, but many desirable spp. also.

2) Site looked better this year when compared to 1993 with more desirable species beginning to become established.

3) Also note the site looked better in 1993 when compared to 1992.

UP&L-DEER CREEK

Sediment Pond Dam

Acreage: < 2 acre

Slope: 1-25 deg

Exposure: variable

Sample Date: 15-19 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS

<i>Chrysothamnus nauseosus</i>	15.00	0.00	0.00	0.00	0.00	0.00	0.00
--------------------------------	-------	------	------	------	------	------	------

FORBS

<i>Halogeton glomeratus</i>	0.00	0.00	0.00	0.00	0.00	0.00	2.00
<i>Aster chilensis</i>	5.00	30.00	15.00	25.00	5.00	0.00	0.00
<i>Kochia scoparia</i>	0.00	0.00	0.00	0.00	25.00	15.00	3.00

GRASSES

<i>Elymus trachycaulus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus salinus</i>	0.00	0.00	0.00	0.00	0.00	5.00	0.00
<i>Agropyron cristatum</i>	0.00	0.00	0.00	0.00	5.00	0.00	0.00
<i>Elymus lanceolatus</i>	5.00	10.00	10.00	10.00	5.00	10.00	30.00
<i>Elymus cinereus</i>	0.00	0.00	25.00	0.00	0.00	5.00	0.00
<i>Stipa hymenoides</i>	15.00	0.00	0.00	0.00	5.00	0.00	0.00
<i>Sitanion hystrrix</i>	0.00	10.00	0.00	0.00	5.00	5.00	0.00
<i>Bromus carinatus</i>	0.00	0.00	0.00	5.00	0.00	0.00	0.00

COVER

Total Living Cover	40.00	50.00	50.00	40.00	50.00	40.00	35.00
Litter	5.00	15.00	10.00	15.00	20.00	40.00	5.00
Bareground	30.00	25.00	20.00	35.00	20.00	10.00	40.00
Rock	25.00	10.00	20.00	10.00	10.00	10.00	20.00

% COMPOSITION

Shrubs	37.50	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	12.50	60.00	30.00	62.50	60.00	37.50	14.29
Grasses	50.00	40.00	70.00	37.50	40.00	62.50	85.71

UP&L-DEER CREEK
 Sediment Pond Dam
 Acreage: < 2 acre
 Slope: 1-25 deg
 Exposure: variable
 Sample Date: 15-19 Aug 94

8.00	9.00	10.00	Mean	SDev	Freq	
0.00	0.00	0.00	1.50	4.50	10.00	SHRUBS
						<i>Chrysothamnus nauseosus</i>
5.00	0.00	0.00	0.70	1.55	20.00	FORBS
10.00	20.00	5.00	11.50	10.01	80.00	<i>Halogeton glomeratus</i>
0.00	0.00	0.00	4.30	8.21	30.00	<i>Aster chilensis</i>
						<i>Kochia scoparia</i>
0.00	0.00	30.00	3.00	9.00	10.00	GRASSES
0.00	0.00	0.00	0.50	1.50	10.00	<i>Elymus trachycaulus</i>
0.00	0.00	5.00	1.00	2.00	20.00	<i>Elymus salinus</i>
15.00	20.00	10.00	12.50	7.16	100.00	<i>Agropyron cristatum</i>
0.00	0.00	0.00	3.00	7.48	20.00	<i>Elymus lanceolatus</i>
0.00	0.00	0.00	2.00	4.58	20.00	<i>Elymus cinereus</i>
0.00	0.00	0.00	2.00	3.32	30.00	<i>Stipa hymenoides</i>
10.00	10.00	0.00	2.50	4.03	30.00	<i>Sitanion hystrix</i>
						<i>Bromus carinatus</i>
40.00	50.00	50.00	44.50	5.68		COVER
10.00	5.00	15.00	14.00	9.95		Total Living Cover
30.00	25.00	10.00	24.50	9.34		Litter
20.00	20.00	25.00	17.00	6.00		Bareground
						Rock
0.00	0.00	0.00	3.75	11.25		% COMPOSITION
37.50	40.00	10.00	36.43	19.00		Shrubs
62.50	60.00	90.00	59.82	17.55		Forbs
						Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Temp. Sediment Basin

AREA: Deer Creek Mine Area

DATE: August 15-19, 1994

WORKERS: P. Collins

SLOPE: 1-2 deg.

EXPOSURE: variable

AREA: < 1 acre.

ANIMAL USE/DISTURBANCE: Slight

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

Aster chilensis
Bassia hyssopifolia
Kochia scoparia
Melilotus officinalis

NOTES: 1) As reported in 1993, the vegetation was patchy when desirable species and weeds were compared. For example, 1993 we reported some areas had <25% weeds, whereas others has >75% weeds. This year, however, there seemed to be more desirable species.

UP&L-DEER CREEK

Temp. Sediment Basin

Acreage: < 1 acre

Slope: 1-2 deg

Exposure: variable

Sample Date: 15-19 Aug 94

1.00 2.00 3.00 4.00 5.00 6.00 7.00

SHRUBS**FORBS**

Aster chilensis	0.00	0.00	0.00	0.00	10.00	0.00	0.00
Kochia scoparia	0.00	0.00	0.00	0.00	0.00	20.00	10.00
Astragalus cicer	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medicago sativa	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GRASSES

Bromus tectorum	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Elymus lanceolatus	10.00	10.00	30.00	15.00	10.00	0.00	25.00
Bromus carinatus	15.00	10.00	0.00	0.00	0.00	10.00	0.00
Stipa hymenoides	0.00	5.00	0.00	10.00	5.00	0.00	0.00
Sitanion hystrix	0.00	0.00	0.00	0.00	10.00	10.00	0.00
Elymus cinereus	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COVER

Total Living Cover	25.00	25.00	30.00	25.00	35.00	40.00	45.00
Litter	30.00	30.00	35.00	35.00	25.00	40.00	35.00
Bareground	20.00	20.00	10.00	30.00	15.00	10.00	10.00
Rock	25.00	25.00	25.00	10.00	25.00	10.00	10.00

% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	0.00	0.00	0.00	0.00	28.57	50.00	22.22
Grasses	100.00	100.00	100.00	100.00	71.43	50.00	77.78

UP&L-DEER CREEK
 Temp. Sediment Basin
 Acreage: < 1 acre
 Slope: 1-2 deg
 Exposure: variable
 Sample Date: 15-19 Aug 94

8.00	9.00	10.00	Mean	SDev	Freq
------	------	-------	------	------	------

SHRUBS

0.00	0.00	0.00	1.00	3.00	10.00	FORBS
0.00	5.00	20.00	5.50	7.89	40.00	<i>Aster chilensis</i>
5.00	5.00	0.00	1.00	2.00	20.00	<i>Kochia scoparia</i>
5.00	0.00	0.00	0.50	1.50	10.00	<i>Astragalus cicer</i>
						<i>Medicago sativa</i>

0.00	0.00	0.00	1.00	3.00	10.00	GRASSES
15.00	0.00	15.00	13.00	9.00	80.00	<i>Bromus tectorum</i>
0.00	15.00	10.00	6.00	6.24	50.00	<i>Elymus lanceolatus</i>
0.00	0.00	0.00	2.00	3.32	30.00	<i>Bromus carinatus</i>
0.00	0.00	5.00	2.50	4.03	30.00	<i>Stipa hymenoides</i>
10.00	10.00	0.00	2.00	4.00	20.00	<i>Sitanion hystrix</i>
						<i>Elymus cinereus</i>

35.00	35.00	50.00	34.50	8.20	COVER
35.00	55.00	10.00	33.00	10.77	Total Living Cover
20.00	5.00	35.00	17.50	9.01	Litter
10.00	5.00	5.00	15.00	8.37	Bareground
					Rock
0.00	0.00	0.00	0.00	0.00	% COMPOSITION
28.57	28.57	40.00	19.79	17.68	Shrubs
71.43	71.43	60.00	80.21	17.68	Forbs
					Grasses

PACIFICORP
QUALITATIVE SAMPLING DATA SHEET AND
QUANTITATIVE/QUALITATIVE NOTES
1994

SITE NAME: Roadside Area

AREA: Deer Creek (1990 Reveg. Area)

DATE: August 15-19, 1994

WORKERS: P. Collins

SLOPE: 5 deg.

EXPOSURE: NE

AREA: < 1 acre

ANIMAL USE/DISTURBANCE: Slight

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

Aster chilensis

Bassia hyssopifolia

Grindelia squarrosa

Halogeton glomeratus

Helianthus annus

Machaeranthera canescens

Kochia scoparia

Melilotus officinalis

Elymus lanceolatus

Elymus smithii

Elymus spicatus

Bromus carinatus

Elymus cinereus

Hordeum jubatum

Stipa hymenoides

Sitanion hystrix

NOTES: 1) Sampled west side of the road randomly.

2) Had fair representation of weedy but more desirable species.

3) < 25% weeds by cover in areas of the erosion control mounds.

4) < 10% weed cover on the bottom areas where water collects.

5) Site seemed to have improved this year when compared to 1992 and 1993.